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THE NATIONAL MAGAZINE FOR PURCHASING AGENTS



HON. ROBERT P. PATTERSON See Page 8

War, in a Democracy, Must be a Partnership

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November, 1943

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WORLD'S largest steel casting, this giant top cap for a 12,000-ton armor plate press typifies America's genius and ability to increase output by continually improving mass production methods.

In seeking to meet the Nation's urgent requirements of more and more war munitions, management everywhere is finding real help through Texaco Engineering Service and Texaco Petroleum Products.

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Mr. Now: Weather and "in-a-hurry" operators give these Century shipyard crane motors a beating 24 hours a day.

Mr. Postwar: Motors that will take that kind of punishment are just what I need for my mill.

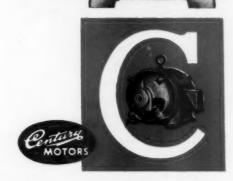


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"Shadowtage" means sabotage due to shadows on the working plane — especially when they blur delicate machining operations held to tolerances of 1/10,000th of an inch.

The best-known answer to "shadowtage" is the scientific installation of shadowless and glare-free fluorescent lighting. It is our job to supply the fluorescent and incandescent lighting equipment that is helping to speed war production all over the country.

Aggressive and independent Sylvania research developed and introduced the first successful fluorescent installation — forerunner of war plant fluorescent by the thousands of miles of lamps today.

And now — years ahead of time — Sylvania is producing the fluorescent fixture of the future. A revelation in simplicity and adaptability, one standard fixture meets any industrial lighting requirement. Similar developments may bring economical fluorescent lighting into American homes after the war.

For industrial fluorescent lighting equipment, designed to work together, specify Sylvania Fluorescent Lamps, Fixtures and Accessories for replacements and authorized new installations.



THE FIXTURE OF THE FUTURE. This new fixture, which can challenge comparison with any other in the fluorescent field, is much more than a design to save critical war materials. Its non-metallic reflector has an efficiency of 86 per cent — actually more than that of enameled metal. The streamlined top housing, constructed like a cantilever bridge, encloses the ballast—protects it from dust—provides cooler performance.

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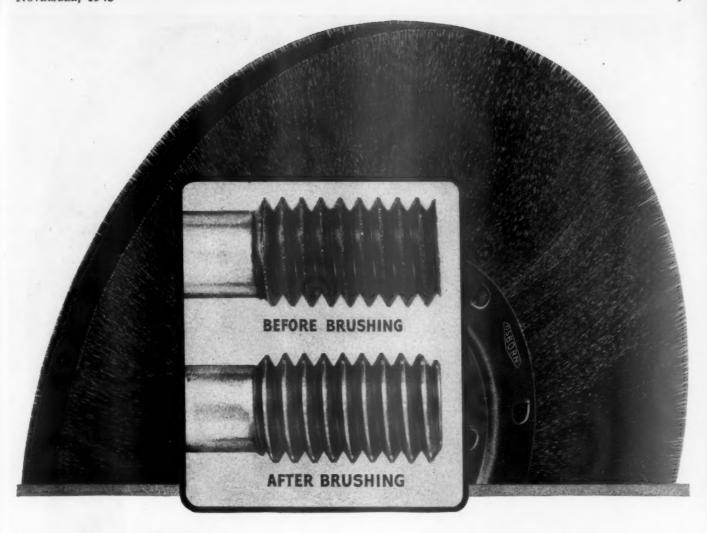
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GYPTIAN



Victories hang by these threads -clean them faster

SPEED the cleaning of these threads!... the threads on bolts and studs and shafts and axles and gears. They're the threads that hold a war machine together... the threads that victories hang by!

Normally such threads have tiny burrs and ragged corners. You can see them in the magnified view at the top. Often these particles of metal slow up assembly operations. More than that, there is always the danger that they will break off and ultimately score or damage vital moving parts.

That's why today the great majority of threaded parts for war work are being cleaned. And to clean threads thoroughly and efficiently more and more companies are turning to Osborn power-driven brushes to speed up this important operation. No matter what the stock or depth of cut, there's an Osborn brush for every thread-cleaning job. There are, in fact, Osborn brushes for speeding up every industry's cleaning, polishing, buffing and finishing operations.

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Extra convenience, efficiency, safety . . . with this

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You would expect to pay much more — perhaps several times as much—for the features and all-around quality you find in this low-cost Delta machine.

Delta's patented Twin-Lite safety shields minimize the risk to the most inexperienced operator. They increase efficiency and accuracy by flooding the work with light . . . on both sides and face of the wheel . . . at all times, regardless of general lighting conditions in the shop.

This is just one of many features which give you the finest working combination on the market — regardless of price — for all-around industrial grinding. Sim-

ple, easily adjusted attachments enable operators to do accurate drill grinding, etc. with a minimum of training.

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He can give you information on this and other low-cost Delta machines—including latest data on pricities, deliveries, etc. (Delta sells only through distributors). Then install one of these efficient machines—for results that are a lasting credit to your good judgment. Mail the coupon for new Delta catalog.

Safety shields: Double thickness shatter-proof glass. Two lamps wired to motor switch. Wheel guards meet strict safety regulations of Wisconsin Industrial Commission.

Tool rests fully machined, accurate. Fully adjustable, easily detached.

Wheels: Absolutely true and vibrationless for accurate, satisfactory results. Balanced to 1/100-inch ounce. Size: One-inch face by 7-inch diameter, 5/8-inch hole.

Type: 60N and 46M aluminous oxide.

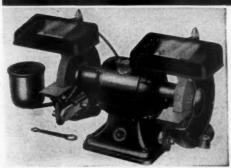
Bearings: Precision double-sealed New Departure ball bearings — lubricated for life, protected against damage from abrasive dust.

Heavy Base, 141/2" x 151/2". Tool rests 39" from floor.

Price complete F.O.B. Milwaukee, (depending on type of motor required). \$72.00 to \$89.50. A-1-A priority required.



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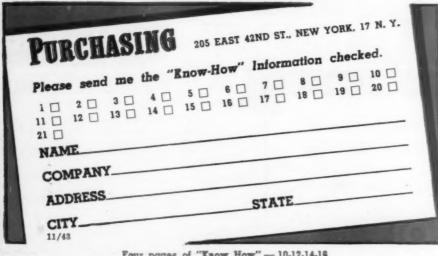
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"Know-How" Information

- 1. PAVING PRODUCTS -Catalog covers mastic board tongue and groove joints, fibre expansion joints, asphalt expansion joints, sealing compound, sewer joint compound, and gives information on applications. Keystone Asphalt Products
- 2. WELDING & CUTTING Handbook for Operators—Purpose is to instruct users of the oxy-acetylene welding and cutting process how to prolong the life of their equipment. It contains a list of concise do's and don'ts, and information on the care and maintenance of equipment and accessories. Say how many copies you want. International Acetylene Assn.
- 3. DRUM & BARREL CARRIER-Catalog describes Ernst drum and barrel carrier, what it does, and how it works. Rims of drums or barrels cannot catch, rip or dig up floors. Obviates personal injuries and container damage. Ernst Carrier Sales Co.
- 4. DUST & FUME Control Equipment -New book of 42 pages in color shows booths, spray actual installations of dust-and-fume control washers, and industrial ovens. Section is devoted to sheet metal equipment with built-in systems for removal of fumes or dust in welding, grinding, buffing and similar operations. Schmieg Industries.
- ☐ 5. PORTABLE EMERGENCY LANTERN —A "Damage Control Light", developed for use on combat vessels in smoke and steam filled compartments when normal lighting systems fail, is described on a single-sheet bulletin. The lantern which has now been released by the Navy for industrial use, may be had complete with navy type storage battery, for use with dry cells or for use with standard storage bat-tery. The F. W. Wakefield Brass Co.

- ☐ 6. RADIO & ELECTRONICS—100 page catalog of all types of radio and electronics supplies for production lines and maintenance, research and control laboratories, war training and combat—a quick reference buying guide. Allied Radio
- 7. MIDGET MILLING CUTTERS for the metal, wood and plastics industries, made of high-speed steel "ground from the solid after hardening"—all sizes—all shapes are described in recent bulletin. Severance Tool Co.
- 8. BILGE PUMP—A portable bilge pump with a 14-gallon per minute capacity, with body of corrosion resistant metal, is covered by data sheet. Ampco Metal Inc.
- 9. FLUORESCENT LIGHTING—Bulletin covers units and continuous systems, which conform to Government regulations; reflector efficiency is put at 85%; air-cooled ballast. A. L. Smith Iron Co.
- ☐ 10. WOOD OFFICE FILING EQUIP-MENT-Guardsman line of correspondence and card filing equipment, ledger trays, and transfer and storage case, are covered by excellent catalog in color. Remington-Rand.
- ☐ 11. MIXING & PROCESS Equipment Illustrated catalog contains rules for selecting mixers, estimating power for mixing, and specifications, and information on propeller, turbine and slow speed mixers. International Mixing Co.
- 12. TRUCK BODY FORGINGS fusely illustrated catalog covers shackles, eye bolts, variety of clips, door controls, corner irons, stake pockets, hooks and other forgings for truck and bus bodies. Cleveland Hardware & Forging Co.

- 13. COPIES ANYTHING Catalog describes Electro Copyist, in variety of styles, which connects with ordinary lighting circuit, is easily portable in office models. Equipment is said to copy anything that is drawn, printed, photographed or typed. Special machine takes drawings 48" x 168". Hunter Electro Copyist, Inc.
- 14. AMPLIDYNE Profusely illustrated 36-page bulletin describes functions of the amplidyne, lists typical applications, and in many cases cites figures showing the gain in production levels made through its use. General Electric Co.
- 15. ELECTRONIC INDUCTION HEAT-ING—Inductive heating of small parts and use of electronic heater for wide variety of brazing and soldering operations on small parts, and General Electric Electronic Heaters, are described in new bulletin.
- ☐ 16. LUBRICANTS Lubriplate, termed the "new modern lubricant" for delicate precision apparatus up to heavy reducing gears and steel mill bearings, available in fluid and grease types, in wide variety of viscosities and densities, is described in new bulletin. It is claimed to give better and cheaper lubrication, lower upkeep costs and reduce power consumption. Lubricate Divn., Fiske Bros. Refining
- ☐ 17. WARTIME PACKAGING Kimpak Creped Wadding for protecting small and large pieces of vital war equipment against shipping damage, is described in bulletin which illustrates a variety of pads, rolls, strips and so on, for varied uses. Kimberly-Clark Corporation.
- 18. FLEXIBLE COUPLINGS For Use on All direct connected machinery, which are guaranteed to be "mechanically perfect", are illustrated and described in 70-page spiral bound catalog with simulated leather covers. Poole Foundry & Machine
- 19. ALUMINUM PARTS—A broadside that will give you ideas. It shows some of the 350 widely diversified war produced in aluminum. Aluminum Goods Mfg. Co.
- 20. GYPSUM ROOF PLANKS as substantial, fireproof roof deck material that can be applied over wood joints, are described in new bulletin. The panels 1", $1\frac{1}{2}$ " or 2" thick, are 2' wide and 6 to 10 ft. long. All have shiplap edges on long sides. The $1\frac{1}{2}$ " plank is available with tongue and groove joints on long edges.
 National Gypsum Co.
- ☐ 21. TAPES, RULES, Squares, Gages, Micrometers, Calipers, etc. You should (Continued on page 12)



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PRECISION FILES



Making quality precision files is as much a matter of skill as using them. It calls for workmanship of the highest order; for specific-analysis steels held uniform under rigid inspection; for manufacturing technique that demands undivided devotion to the art of file making.... A task for specialists, indeed!

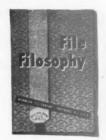
Nicholson has been specializing on files—and files only!—for seventy-nine years. Nicholson builds its own file-cutting machines. They embody Nicholson inventions which are among the greatest improvements in modern file-making processes.

If at times you experience difficulty in getting certain types or sizes of Nicholson X.F. Swiss

Pattern Files, blame it on the tremendous wartime demand for these types of files; and to the unusual problems of greatly increasing production (for it takes years for file cutters to attain the superior skill required for this exacting work).

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"Know-How" Information, Continued USE COUPON ON EACH PAGE

have a copy of this 257 page Lufkin Catalog, with special section on Chrome-Clad steel tapes. The Lufkin Rule Co.

☐ 22. PIPE JOINT COMPOUND—Prepared cement that expands as it sets, and is said to have definite expanding action after setting, and withstands deflection, high temperature and vibration, is described in circular. Its name is X-Pando; it comes ready for use and one pound is said to do the work of 4 to 5 pounds of ordinary compound. X-Pando Corporation.

23. GOVERNMENT SPECIFICATIONS for Plywood and Adhesives. Four basic specifications are described, with brief description of adhesive requirements. Specifications described include Cold Setting Resin, Fluid Pressure Molding, Packaging and Packaging Requirements for Overseas Shipment, cargo bodies, etc. Test procedures are outlined and adhesive which best meets requirement is recommended. Resinous Products & Chemical Co.

☐ 24. AUTOMATIC CALCULATORS — Small catalog describes automatic calculators which are termed "effort savers", and available for all figure work requirements. Friden Calculating Machine Co.

☐ 25. HEATING & AIR CONDITIONING—Registers and grills of the baseboard and floor type, gratings, cold air faces, adjustable ventilators, and multiple louver registers are completely covered in 64-page catalog and price list. Auer Registers.

☐ 26. PRINTING AND BOOK PAPER—Portfolios contain printed samples of Trufect levelcoat paper, Multifect levelcoat paper, Kimfect levelcoat paper, and Hyfect all-purpose book paper—English finish, and also unprinted samples. Get sets for your Paper file by checking No. 26. Kimberly-Clark Corp.

☐ 27. PRINTING CALCULATOR, said to be the only calculator that divides automatically and prints Dividends, Divisor, Quotient and Remainder; that multiplies electrically and prints multiplicand, multiplier and products; and lists, adds, subtracts and prints each factor in every calculation, is described in new bulletin. The unit is portable, rugged, compact and quiet. Copying of figures is unnecessary—they're all printed. Remington-Rand.

☐ 28. PULLING TOOLS—Bulletin on pulling tools explains and illustrates approved methods for removing and replacing gears, bearings, pulleys, sheaves, wheels, couplings, shafts and other closely fitted parts. Also describes the OTC Pulling system comprising Grip-o-Matic Pullers, and Push-Pullers. Owatonna Tool Co.

☐ 29. SILVER BABBITT—Bulletin tells of advantages of silver babbitt—retention of hardness at elevated temperatures, ease of bonding, resistance to squeezing, corrosion resistance, etc. National Bearing Metals Corp.

☐ 30. LIGHTING—Floodlights for outdoor and indoor use and fluorescent two-section unit with single ballast, and metal-saver luminaire, are illustrated and described in two single-sheet bulletins. Commercial Products Co.

☐ 31. SUMP TANK CLEANING Machine—Machine which is said to remove all sludge, old oil coolant and chips in less than 10 minutes, is described in single page bulletin. W. R. Carnes Co.

☐ 32. REAMER BOOK—Reaming tools and standard and special setups are illustrated in , the new Wetmore Reamer Book. Wetmore Reamer Co.

☐ 33. PLASTIC SURFACES — Formica modern surface materials for interiors and equipment of offices, stores, and other private and public buildings are described and their uses illustrated in new Plastic Surfaces bulletin. Two-page spread shows 50 examples of formica colors and decorative patterns. Formica Insulation Co.

☐ 34. SHAFT JOINTS & ASSEMBLIES—Hinged and Universal types, operating range 0° to 360°, are detailed in registered catalog, second edition, in which important changes have been made. Copies of these catalogs are available for persons interested in equipment for remote controls. Brooks Equipment Co.

35. STRUCTURAL MAINTENANCE
Stonhard Products for quick repair of floors and driveways, patching and resurfacing; caulking and patching and resurfacing roofs, skylights, etc., wall surfaces, interior and exterior, and for water-

proofing and acid-proofing, are detailed in 48 page catalog. Stonehard Co.

No

☐ 36. pH INDICATOR—Catalog describes new portable universal pH indicator for laboratory and plant. Instrument is said to give accurate and direct reading not only with its own self contained glass electrode but also with the quinhydrone, hydrogen or any other electrode following the Nernst equation. Leeds & Northrup Co.

☐ 37. GLUE—FREE SAMPLES—Check No. 37 for literature in regard to Liquid Hide Glue, and test sample. Glue does not require mixing or heating, and manufacturer states there is no loss of spread or strength; no loss from souring, or waste of unused mixtures; no special equipment, and other advantages. The Franklin Glue

□ 38. CONDENSER TUBE MANUAL—112 page Manual is compact, ready-reference on tubes used in condensers, heat exchangers and evaporators. It contains the latest A.S.T.M. and Federal Specifications on standard alloys, weight tables, steam notes, etc. Bridgeport Brass Co.

☐ 39. ABRASIVE SPECIALTY ITEMS— New catalog illustrates and describes Three-M Abrasives—slotted discs, cloth cartridge rolls, spiral wound strips, bands, fibre combination discs, utility rolls, belts, etc. Minnesota Mining & Míg. Co.

☐ 40. FOOD SERVICING in War Plants—Hot food servicing to workers, equipment for decentralized feeding, and for serving hot coffee and soups, keeping foodstuffs hot, and the solution of other inplant feeding problems are discussed in literature on food, soup and liquid carriers and accessories. Vacuum Can Co.

☐ 41. ELECTRICAL CONTRACTING — Booklet by National Electrical Contractors Association explains the services of NECA electrical contractors for re-conversion, construction or maintenance work.

☐ 42 RELAY DATA BOOK—New from cover to cover, it explains in detail new type designation system for Dunco relays. Many standard relays and timers are described in detail, and listings give an indication of various adaptations obtainable. Struthers Dunn, Inc.

☐ 43. GRINDING WHEELS—64 page booklet of Helpful Hints and Safety Suggestions available for your grinding department. How many copies can you use? Check No. 43. Macklin Co.

☐ 44. BOLTS. SCREWS, NUTS, Rivets, Cotters, Tacks—Here's a 228-page catalog you should have. It also contains data on aviation fasteners, Phillips miscl., and technical data. National Screw & Mfg. Co.

45. BETTER FILING—Selecting right file for the job, and proper care and use of files. This is subject matter of "File Filosophy". Also contains data for Purchasing and Production heads. Nicholson File Co.

☐ 46. WOOD STORAGE UNITS — Tool storage, handling containers, shoprobes, (Continued on page 14)

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As a guide for cutting individual parts to exact shape and to locate drilling centers accurately, aircraft men use flat metal patterns called templates. As bomber size increased and parts became larger and larger, it became difficult to reproduce these templates—the size of the pieces crowded the limitations of cameras and lenses.

One aircraft production engineer wondered if giant templates could be made by a metal proof press, and went to Wagner Litho Machinery Company to find out. Normally Wagner builds more proving presses and related equipment for metal lithography than all other companies combined. They were used to specialized jobs—knew how to do them well.

That's why the first press they turned out for the aircraft company (even though a giant size) was so successful in reproducing templates accurately and by the hundreds. Since then, Wagner has built and installed many other such presses in aircraft plants and, in so doing, has helped to speed up airplane production.

This is an example of Wagner precision and skill, the kind of craftsmanship that has helped to solve the toughest problems involving transfer of designs onto metal, or other materials. If you have a war job or a peacetime project of this nature, Wagner engineers are available to help save your time and to obtain a better product.



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"Know-How" Information, Continued

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lockers, cabinets, etc. Units are engineered to save space, protect tools and parts, and to reduce fire and accident hazards; durable, practical equipment. Lyon Metal Products.

- ☐ 47. VALVES—Order valves when job is in blueprint or construction stage. Reference book shows standard types, sizes and uses of Homestead valves. Homestead Valve Mfg. Co.
- ☐ 48. METALLIZING EQUIPMENT—Metco News, 16-page periodical published every other month, describes and illustrates maintenance and production applications of the metallizing process. If you would like to receive it regularly, Check No. 48. Metallizing Engineering Co., Inc.
- ☐ 49. SINTERED-CARBIDE Tips and Tools
 —Color-Branding indicates grade at a
 glance. Color Chart showing 8 colors
 available for hanging on the wall. FirthSterling Steel Co.
- ☐ 50. MATERIALS HANDLING Lift trucks, skids, barrel trucks, storage racks, portable elevators, etc., are described in new catalog. Barrett-Cravens Co.
- ☐ 51. WIRE ROPE—Riggers' Hand Book contains 96 pages of practical wire rope sling information. Broderick & Bascom Rope Co.
- ☐ **52. BOLTS, NUTS, SCREWS**—"Simplified Stock List" conforms to latest revisions of the OPA. It shows in what ratio quantites of various standard products are kept in stock for deliveries by jobbers and in warehouse stocks of bolt manufacturers. Lamson & Sessions Co.
- ☐ 53. G-E RENEWAL PARTS—Simplified catalog helps get parts faster. Name of this 96-page catalog is "Renewal Parts and Supplies". Check No. 53. General Electric Co.
- 54. HIGH TENSILE STEEL—Booklet describes the properties and characteristics of N-A-X High Tensile and N-A-X 9100 Series Alloy Steel. Great Lakes Steel Corp.
- ☐ 55. FIRE-FIGHTING—"How to Teach Fire-Fighting" tells how to stage a fast-

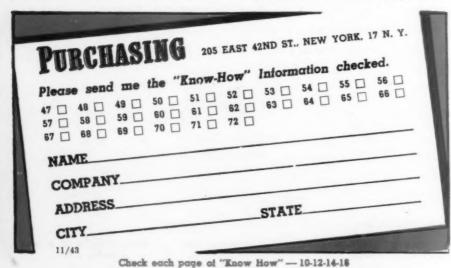
moving, interesting, instructive demonstration of extinguishing methods. Walter Kidde & Co.

- ☐ **56. CRANES**—Hydraulic bridge braking systems. Bulletins on brake installation and service instructions, cover inside cranes, and outside cranes where automatic parking attachment is necessary. Wagner Electric Co.
- ☐ 57. CUTTING TOOLS—Catalog covers carbide and Hi-Speed tools for the precision and speed demanded today. Blueprints of special tools wanted, are invited. Archer & Smith.
- ☐ 58. FILING SYSTEMS & SUPPLIES—Catalog describes card filing and vertical filing systems, card guides, folders (vertical blank and vertical printed sets), labels, guides, inserts and so on. Victor Safe & Equipment Co., Inc.
- ☐ 59. PORCELAIN INSULATORS—Catalog lists thousands of types and sizes of varied porcelain units—boxes, brackets, cleats, knobs, cutouts, hardware, bushings, receptacles, etc. Porcelain Products, Inc.
- ☐ 60. CORRUGATED BOXES Booklet tells how to specify corrugated boxes. This is No. 7 of "Little Packaging Library" which is available for the asking. The Hinde & Dauch Paper Co. Check No. 60 for this set.
- ☐ 81. STEEL FILE Signals—Sample Card carries 20 vertical card and visible record signals in variety of styles which are made of stainless steel and come in twelve colors. Small circular covers stationery specialties. H. C. Cook Co.
- ☐ 62. POCKET REMINDERS—The pocket memorandum book with tear-off coupon fillers in variety of styles is described in new catalog. These are excellent for daily check on orders, lists, plans, appointments, etc. Robinson Reminders.
- G3. AMERICAN REVOLVER—For large scale material handling problems,— Construction, Industrial Material Handling. Stevedoring and Marine Service. Its uses are innumerable with hook, bucket, magnet, or pile hammer. This unit is adaptable for

mounting on fixed or traveling tower, carboly and wheels, barges, ships, pier or wharf. New catalog details this "one man task force" and its various installations. American Hoist & Derrick Co.

- ☐ 64. PIPE TOOLS—New 60-page catalog covers pipe threading devices, bolt threading devices, pipe cutters, reamers, pipe vises, portable work benches, boring tools, power drives, dies, etc. The Toledo Pipe Threading Machine Co.
- ☐ 65. SYNTHETIC RUBBER How it is made, how it compares with natural rubber, and its future. This the story told in new finely illustrated 44-page book just released by the Dayton Rubber Mfg. Co. Its title is "Towers of Triumph."
- Ge. ANNULAR BALL BEARINGS—New catalog and bulletins give complete data on "Commercial" annular ball bearings, aircraft bearings conforming to AN 201, Air Corps 25524 and Navy 42B8; and rollers. Data includes dimensions and capacities. The Schatz Mfg, Co.
- ☐ 67. WET CUT-OFF MACHINE New bulletin illustrates Abrasaw wet cut-off machine and its special features. It is said to be ideal tool for the cutting of bars and shapes having a capacity of 1" in solid bars and 2" in tubing. It is designed to eliminate vibration. Bridgeport Safety Emery Wheel Co., Inc.
- ☐ 68. RENEWABLE FUSES—New catalog describes Hi-Lag renewable fuses which it is claimed will help to eliminate needless fuse blowing, and provide for accurate renewal with ease and speed. Ware Brothers.
- G9. WELDING STAINLESS STEEL—This book outlines why stainless is not difficult to weld, and by text and full color photographs, it tells about the various methods used. It is an elementary, practical instruction manual, and at the same time a complete technical explanation of stainless welding. Sections are devoted to Effects of Heat on Stainless Steels, Metallic Arc Welding, Atomic Hydrogen Welding, Oxygen-Acetylene Welding, Electric Resistance Welding and Welding Pluramelt Steels. Allegheny Ludlum Steel Corp.
- ☐ 70. BEARING METALS—Booklet gives the "Know How" of "Making Journal Bearings," details physical characteristics of Magnolia Bearing Metals, and Isotropic Die Cast bearing bronze. Magnolia Metal Co.
- ☐ 71. PORCELAIN ENAMEL—This book gives information on the physical properties of porcelain enamel, and of especial interest is chart based on data gathered by the Bureau of Conservation, WPB, which is offered as a guide in making substitutions. American Rolling Mill Co.
- ☐ 72. OIL-DRI—This is oil and grease absorbent which "absorbs its weight in oil". Folder gives information on Oil-Dri and Oil-Dri-Soluble and their use in preventing accidents, reducing fire hazards, and keeping floors clean and sanitary. Oil-Dri Company.

(Continued on page 16)



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9 Important Factors That Affect Wire Rope Life

Some years ago, a lad came into the country crossroads store and announced sadly that his pet dog had died. "Too bad, son," consoled the storekeeper. "Did he have a dog doctor?" "No sir," answered the lad, "he just died by himself."

Your wire rope may end up that same way. It too can die by itself because of lack of care or attention. But you can help



your ropes "live" longer . . . and that is most important today...by consulting a trained and experienced wire rope engineer. Macwhyte engineers (rope doctors) are always glad to be of assistance.

Then there is another thing you can do. By knowing what the most common "rope saboteurs" are, by taking precautions against them yourself, you can improve your wire rope service.

9 Factors Affecting Service

There are many factors affecting the life of wire rope, but the following nine are the most common.

- 1. Abrasion or wear 5. Crushing or mashing
- 2. Bending or flexing 6. Jerking or shock 3. Tension or stress 7. Vibration
- 4. Speed
- 3. Tension or stress

8. Heat or friction 9. Weathering or corrosion

In reviewing these factors, we realize that some of them are normal and to be expected, but they are, nevertheless, included because all factors need to be checked and watched to see that they do not become abnormal.

The first four listed, for example, are normal when not excessive for the particular job, equipment, size and construction of rope used. The other five are abnormal and where they exist, they should be corrected if at all possible. Many working ropes are exposed to from 3 to 5 of these factors at one time.

What can the wire rope user do about them? Here are a few simple suggestions things you can watch for, simple changes you can make.

1. Abrasion or wear

All operating ropes are subjected to abrasion as a normal part of their duty, but some abrasion is due to neglect. Watch for the causes of abrasion that may be avoided, such as scraping wire rope along the ground, pulling wire rope over sharp edges and, as illustrated (left), allowing wire rope to create a sawing action on rock or other materials. Here we see a deep channel cut into the rock by continuous and frequent contact of the wire rope with the rock as it operated back and forth.

2. Bending or flexing

Too small sheaves and reverse bends are the worst offenders to rope life. Here you see an example of what excessive bending can do. This rope was run over



sheaves that were too small. The results are broken wires, ruined rope.

Watch for broken wires. Inspect your sheave diameters and check to make sure you have the wire rope construction best suited for flexibility and to meet other conditions of your operation. Where sheaves of necessity are smaller than that recommended, use PRE formed wire rope.

3. Tension or stress

All wire rope is subjected to tension or stress, but the problem here is to see that the rope is not overstressed for its size and construction. In some cases, it has been found that a larger rope reduces the stress or pressure and prevents the rope from stretching beyond its elastic limit for which it was designed. Consequently, longer service will be obtained on some installations by increasing the size of the rope.
To obtain the best service from wire

rope, it should not be operated beyond the recommended safe load which is a fraction of its ultimate strength and varies for different types of service, as explained in other articles in this series.

4. Speed

Generally speaking, the greater the speed of operation, the less service that can be expected from wire rope. High speed operation, such as on mine shaft hoists, high speed elevators, and cableway hoisting equipment, requires larger sheaves than recommended for other uses, in order to get the best life out of the rope. Speed is a definite factor affecting wire rope life, and is worthy of study if the best service is to be obtained.

Space does not permit a discussion of the remaining factors in this article; these will be covered later.

In these days of need for wire rope conservation, always feel free to write to Macwhyte Company, state your problems or what information you would like to have and Macwhyte engineers will be glad to give you the benefit of their advice and

This is Number 17 in a series of informative articles on how to get the most out of wire rope. It is directed to those who want to do everything they can to lengthen wire rope life and conserve steel. All articles in the series are available on request.





Mill Depots: New York · Pittsburgh · Chicago · Fort Worth · Portland · Seattle · San Francisco. Distributors throughout the U.S.A. Manufacturers of MACWHYTE PREformed and Internally Lubricated Wire Rope MONARCH WHYTE STRAND Wire Rope MACWHYTE Special Traction Elevator Rope MACWHYTE ATLAS Braided Wire Rope Slings MACWHYTE Aircraft Cables and Tie-Rods

"Know-How" Information, Continued USE COUPON ON EACH PAGE

☐ 73. DUST COLLECTING SYSTEMS in Metal Industries—Brochure describes and illustrates dust-collecting equipment for metal-working plants, especially for grinding, polishing and buffing operations. The Kirk & Blum Mfg. Co.

☐ 74. BLOWER SYSTEMS for Woodworking Plants—Brochure describes and illustrates blower systems in carshops, automobile plants, furniture plants, wooden package plants, implement, millwork, shops, turned-wood plants, and others. The Kirk & Blum Mfg. Co.

☐ 75. PANEL INSTRUMENTS — New line of small, thin, d-c panel instruments featuring revolutionary internal-pivot construction for use in aircraft, and radio and communications equipment, and for application on various types of machinery, are covered by two recent General Electric bulletins. Instruments are approximately 1" deep.

☐ 76. FLUID MOTORS — Bulletin just released covers new fluid motor that is featured by a floating drive. Motor is said to be fully capable of withstanding constant shock loads, and within the recommended speed ranges there are said to be no limits to the number of speeds at which the motors can be operated. Speed can be regulated exactly. Denison Engineering Co.

☐ 77. CENTRIFUGAL PUMPS — Catalog material covers Close-Coupled Pumps designed for many services, notably marine duties, where compactness is at a premium. Impellers are streamlined in the interest of high efficiency and smooth, quiet performance. Pumps are available in a capacity range of from 5 to 1,000 g.p.m. for operating against heads up to 100 lbs. per square inch. Aurora Pump Co.

☐ 78. CMP Booklet—"A Simplified Explanation of Purposes, Principles and Procedures." Covers such topics as "What Materials are Controlled?"; "Are Your Products A or B?"; "How are Controlled Materials Distributed to Producers?"; "What Governs Deliveries?"; Buying MRO Supplies"; and "Priorities for Distributors." It also contains flow charts describing the functioning of producers of Class A and Class B products. Copy for the asking. Manning, Maxwell & Moore.

☐ 79. FLUORESCENT Lighting Ballast — New Magno-Tronic ballast with "Perma-Gap" that is said to assure economic, efficient, fluorescent lighting, is described in four-page bulletin. This control is said to prevent premature black ends—deterioration of the cathodes and emission coating. These ballasts are guaranteed for two years, and will serve litetime if not abused, according to the maker. Industrial Electronics Corp.

☐ 80. CARE OF TIRES—Section 1 of the B. F. Goodrich U. S. Army Training School Manual dealing with the "Care and Maintenance of Combat Tires" is now available on request. Check No. 80 for this manual.

B1. DRILL PRESSES—Catalog covers 15" drill presses, and describes in detail entire line of 75 models in Boice-Crane 2600 Series Helmet Heads and the 1600 Series drill presses. Book also contains data for incorporating drill press heads, parts and work tables into special machines and cost reducing labor saving fixtures for various jobs. Time saving accessories also are described.

☐ 82. MATERIAL HANDLING — Apron Feeders. Bulletin of 24 pages covers Amsco-Brayton feeders of manganese steel, "The Toughest Steel Known," illustrating big installations where destructive effect of heavy, repeated shocks and grinding abrasion on pans, links and rollers require toughness. American Brake Shoe Co.

B3. CLEAR BAKING VARNISH—Folder describes Synthite PG-1 Clear Baking Varnish, which was developed to stand up under extremely high speeds attained by some types of motors. It is said to be ideally suited for use on all types of modern coated magnet wire and Class B insulation. John C. Dolph Co.

Digest describes 65 problems and jobs that commonly occur in power plant maintenance; methods are outlined, materials and amounts used given, and results and advantages outlined. This 16-page digest is based on the experience of some 300 internal combustion and central station plants. Oakite Products, Inc.

■ 85. SAFETY REGULATIONS FOR WOMEN In Industry. This is the title of booklet issued to its women employees by the General Electric Company, the purpose of which is to help protect women against the hazards of the shop and also to inform them of safe practices. It is a practical, easy-to-read and easy-to-understand pocket size booklet.

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☐ 86. GRINDING COMPOUNDS — Eleven ractors to consider when evaluating grinding compounds are explained in instructive article in house Magazine Grits & Grinds issued by the Norton Company.

☐ 87. ELECTRONIC SEARCHRAY — Bulletin describes simple, compact X-Ray unit for safe, rapid inspection of small parts, assemblies, moulds and castings of light alloys, ceramics, plastics, rubber and similar products in factory and laboratory. North American Philips Co., Inc.

■ 88. ELECTRICAL SIGNALS — Buyer's pook on the Uni-Pact line of interchangeable industrial signals covers heavy duty bells from 6 to 12 in. diameter, vibrating horns, and an all electric air-blast horn for high power signalling. Adapter plate fits any standard 4-in. square or octagon outlet box. Schwarze Electric Co.

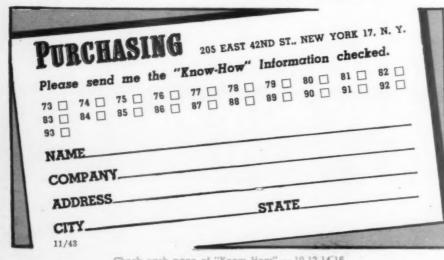
☐ 89. LADDERS. Literature illustrates Duosafety ladders, including a platform ladder that is quickly converted into an extension ladder, three-section truss ladders, folding ladders, two-section wall ladders, heavy duty platform ladders, step ladders and safety shoes. Duo-Safety Ladder Corp.

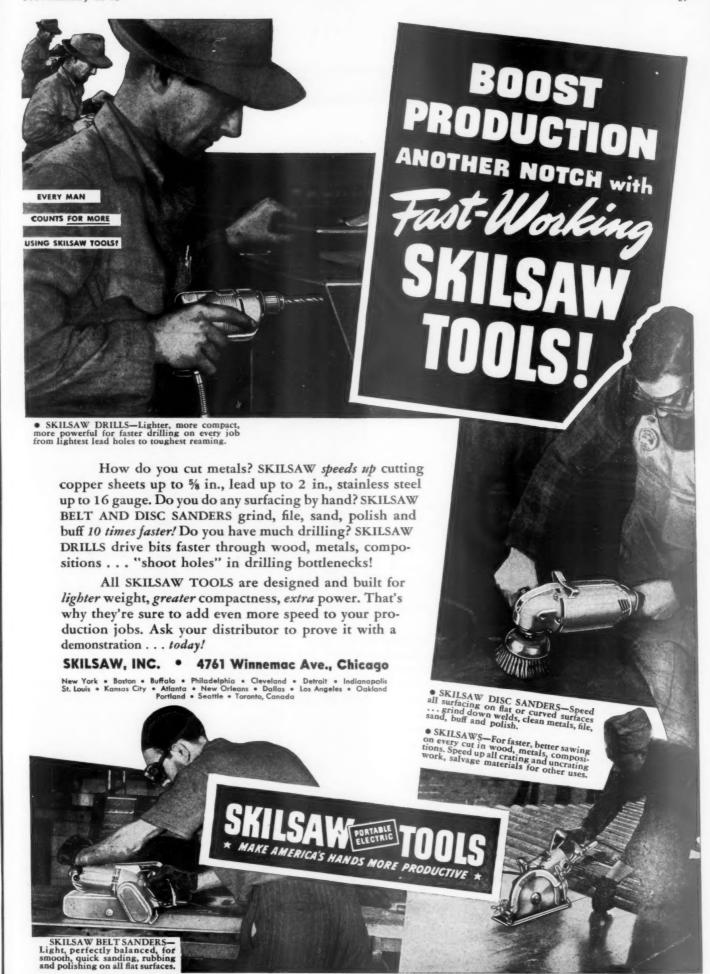
90. AGITATORS—Air motored agitators which operate by compressed air and are safe for use on the most flammable materials are described in generously illustrated catalog of 24 pages, which shows the scope of the applications. They are tradenamed Pneumix. Eclipse Air Brush Co., Inc.

☐ 91. BLIND HOLE GAGE—This gage is said to check the inside diameter, out-of-roundness, taper and other conditions of a hole right down to within .030" of its bottom. Bulletin describes which gage is made for inspecting holes of all sizes from ½" up in diameter and of various lengths. Federal Products Corp.

☐ 92. DIE SECTIONS—Jessop Rolled Composite Die sections which are recommended for straight die sections and also for slightly bent sections, are described in small folder which outlines applications and advantages and shows rolled sizes. Jessop Steel Company.

□ 93. UNIT HEATERS — New series of vertical delivery unit heaters with steel condensers is covered by special bulletin. Units range in capacity from 149,000 btu/hr to 600,000 btu/hr. Designed for wartime application, the steel condensers are protected against corrosion by a special coating of lead alloy. Modine Manufacturing Co.





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REDESIGN WITH INSUROK

The old style Allen-Bradley switchbox required three screws and because of its construction made terminals and wiring hard to get at.

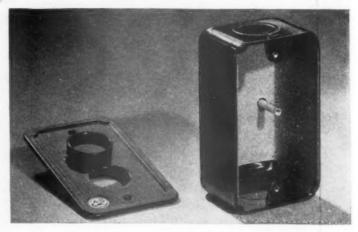
Many products, improved by redesign and restyling, are now far better products than ever. Redesign of commercial products did not, of course, stop with the war. It has been and is a continuous process that is going on now.

Versatile INSUROK plastics, because of their wide range of physical, chemical and dielectric properties, are being used to solve a host of redesign and restyling problems.

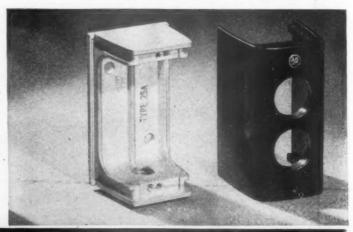
The particular grade of Molded INSUROK used for the new push-button switch, which won an award in the Annual Electrical Manufacturing Product Design Contest, was chosen because of its good insulating properties, permanency of finish and appearance.

Many types of Richardson plastics are speeding Victory today at home and on the combat front. If your product needs redesigning, let Richardson Plasticians help you. They will recommend the right kind of plastic for the job.





The new Allen-Bradley design was a big improvement—required only one screw—kept out dust and fine particles—opened on both sides as well as the front. This was accomplished by fitting the ribs of the cover into grooves in the base.



The RICHARDSON COMPANY

MELROSE PARK, ILL. NEW BRUNSWICK, N. J. FOUNDED 1868
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Warehouse Service



Your orders receive prompt and careful attention from the Jessop Steel Warehouses, where stocks of tool and die steels, stainless, stainless-clad, and composite steels, as well as tool bits, hacksaw blades, music wire, etc., are maintained for your convenience. Contact them for quick service by telephone, teletype, or telegraph.

Our staff of sales representatives and field servicemen will help you solve problems relating to availability and application of Jessop Specialty Steels for your particular requirement.

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JESSOP STEEL COMPANY
HEAD OFFICE AND WORKS WASHINGTON, PENNA

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Established 1901



Crash landings at sea used to mean "curtains." Now, more and more of our fliers come back . . . thanks to modern life rafts. Today's improved "See-ability" is helping workmen build them faster — and better . . .

Let's suppose you're flying a patrol and run out of gas far at sea. Your engine sputters, dies and—down you come.

A tough spot . . . but almost before your ship hits the water you're clear and aboard the rubber raft stowed away for just such emergencies.

Rugged, sea-worthy, these amazing boats have kept fliers and their crews afloat for weeks! No wonder they can take it—when you realize how carefully they are built; how rigidly materials and workmanship are tested and re-tested!

On this life-and-death job "See-ability" through modern improved lighting is playing an important role. It is helping eyes and fingers do their work faster, more efficiently. It is speeding production—reducing "rejects," increasing quality.

In fact, in this as well as other vital war work, millions of Westinghouse Mazda Lamps are bringing better "See-ability," helping set new peacetime lighting standards for the industrial world of tomorrow.

You will find some helpful suggestions on industrial lighting in a booklet "See-ability for Indoor Eyes." Write to the Westinghouse Electric and Manufacturing Company, Lamp Division, Bloomfield, New Jersey. Plants in 25 cities . . . offices everywhere.

Easy on the eyes (opposite page)... Looking for broken threads in boat fabric. Here the operator must look directly into the light. How significant that Westinghouse Mazda Fluorescent Lamps were chosen for this critical task!

KEEP YOUR DOLLARS FIGHTING . . . BUY WAR BONDS





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live to fight again!"

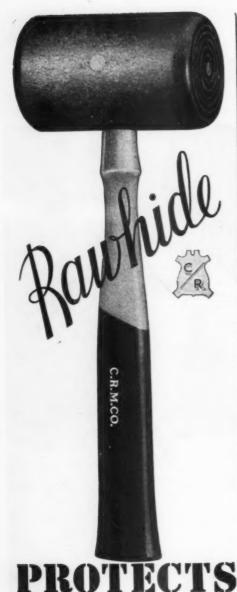




Westinghouse

FOR BETTER "SEE-ABILITY"





C/R mallets and hammers permit forceful, effective blows without battering, scarring or marring. They protect fine finishes, delicate insulation, hardened parts and costly machinery. They far outlast other mallets, hold a true striking face and, because they absorb recoil, they are less fatiguing on continuous use operations (as pounding in winding, assembly work, etc.). Speed production—reduce spoilage. All sizes. Weighted or unweighted. Hammers take replaceable insert faces.

Write for Catalog Sheets

CHICAGO Rawhide MFG. CO
1284 ELSTON AVE.. * CHICAGO. ILLINOIS

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JOHN Temple Graves, Birmingham columnist whose pungent comment appears daily in a score of leading Southeastern newspapers under the heading "This Morning", recently wrote a piece on purchasing which deserves even wider circulation. Our thanks to President Clyde H. Porter of the Birmingham Association, and to an anonymous correspondent in Roanoke, Va., for calling it to our attention and sending us the clippings. Says Mr. Graves:

"It is naught, it is naught, saith the buyer; but when he is gone his way, then he boasteth."

Yesterday I had lunch with the Purchasing Agents Association of Birmingham. They were a sight for sore eyes. I didn't know purchasing was being done with agents any more. I thought it was done with crowbars. But there they were -real live purchasing agents. It was wonderful. Like seeing a new automobile or a red, red steak or something else loved long since and lost a war-while. There they were in the midst of the greatest sellers' market in history, so great that American slang itself has been twisted and men no longer say they have a man "sold" on a proposition—but rather that they have him "bought."

* * * These gentlemen do well to keep themselves organized and eating. They will be kings again some day, when a greatest buyer's market succeeds the greatest seller's. Let the seller beware that day, and beware it now. Let the seller of goods beware, and the seller of services, including domestic services! Sellers who go hog-wild with present advantage, and lose their manners, loyalties or immortal souls because of their wartime popularity, are going to be remembered in days to come. They are making or losing reputations that will be needed vitally in the scramble for jobs and customers after the war.

* * *

The greatest sellers' market now, the greatest buyer's market tomorrow! And, day after tomorrow, let us hope, pray, believe and bring about, the greatest buyers-and-sellers market together, buying and selling on a basis of maximum production at lowest price. That is what Henry Ford has so well said prosperity is—the passing of goods from one person to another. And that is what this nation is going to have if its system of Free Enterprise, so rightly promised release now from excessive federal interfering, is to

survive. We are going to have to become a nation of purchasing agents and sales agents doing enormous business with each other.

UR distinguished contemporary, Fortune, has within the past month released its eleventh annual Management Poll, presenting the opinion of "top-ranking men of U. S. business" on a variety of questions relating to the course of business and economic policy for the days ahead. Scanning the tabulation from the purchasing viewpoint, F.O.B. is particularly interested in the section on competition. One out of every five thinks that business in general needs more competition, but only one in ten believes that more competitors in his own field might be a good thing. Fewer than one in twenty would advocate less competition in business as a whole, but one in seven declare that there should be fewer competitors in their own line.

NO DRAMA in purchasing? Suspense, impending disaster, and the last minute rescue? If that's what you think, we respectfully call attention to a news item in the Rochester (N. Y.) Times-Union of September 17th:

LONE BID ARRIVES AT LAST MINUTE

One minute before the time limit of 11 a.m., Sibert Motors Inc. submitted the lone bid to City Purchasing Agent W. Ray Whitley today on a contract for two automobile coupes for the Health Bureau.

Up to the hour the time limit approached, Whitley feared there would be no bids. The Siebert bid was \$2,215 which included tax and the value of two old cars taken in exchange.

So another near-tragedy turns up with a happy ending; the Health Bureau rides off triumphantly in its shiny new coupes, and Salesman Sibert (or Siebert) takes a bow as the hero of the piece. P. A. Whitley is presumably worrying about whether he will get any bids on the inquiries that close at 11 o'clock tomorrow.

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NIQUE, attractive and helpful is the booklet circulated by Northern Ordnance Incorporated, of Minneapolis, entitled "Introducing the Priority and Purchasing Departments." Purpose of the book is explained in a foreword signed by Purchasing Agent Philip Little, III:

Dear Friends:

During the past few years, you have been confronted with the problem of changing personnel in the many plants you supply.

Much time, we know, has been lost because of your inability to contact the right man or woman with your specific problem.

It is our sincere hope that through this instrument you may become familiar with our organization.

A minute saved will bring VICTORY that much closer.

This is followed by a brief singlepage index to the department, with buyers' names and the products for which they are responsible, and fourteen pages of individual photographs: Purchasing Agent; Assistant Purchasing Agent; Production Engineer; Special Purchasing Representative (Chicago); Buyers and Assistant Buyers of steel, finished parts, commissary and office supplies, machinery and finished parts, steel forgings, electrical equipment, operating supplies, gun mount castings and patterns, hydraulic equipment castings and patterns, and welding supplies; Sub-Contracting Manager and Inspector; Chief Clerk; Expediters; Priority Manager; and the secretaries and clerical assistants to each of the above. bracketed in the particular division or section where their responsibilities lie and with the title or description of their work. There are sixtyeight men and women in this active department, and every one of them is properly "introduced".

The booklet is distributed, not only to the sales managers of the firms with which Northern Ordnance deals, but to the clerks on the city desks who handle the large volume of telephone orders and to others in lesser positions who are actually in contact with the various buyers. It helps, to be able to visualize the voice at the other end of the telephone line, to know what clerk handles particular purchase or expediting records, to know the secretary's name when a certain buyer happens to be busy at the time of a call. Mr. Little modestly reports many "favorable acknowledgments" of the booklet. That is understandable, for it provides a real service to the suppliers who serve his department.

U NIQUE, attractive and help-ful is the booklet circulated by For Economical Operations



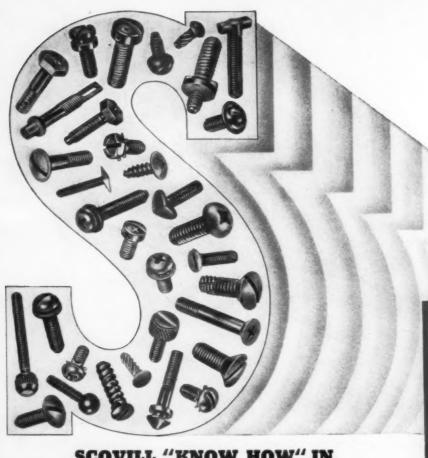
THERE are definite reasons for the consistent top-flight performance of Preformed "HERCULES" (Red-Strand) Wire Rope. Material... design... fabrication... preforming—all are contributing factors that add up to its plus value.

Proof is in performance. Its longer life . . . its easier and quicker handling . . . its shorter "breaking in" period, not only reduce operating costs, but save time and steel as well. Why not take advantage of this 3-way saving?

Available in both Round Strand and Flattened Strand construction.







SCOVILL "KNOW HOW" IN COLD-FORGING OFTEN SOLVES SPECIAL AND STANDARD FASTENINGS PROBLEMS

Scovill fills the three most important requirements for a fastenings source of supply - Quality and Quantity production - plus the "know how" to solve design and production problems effectively and economically. One of many case examples of Scovill skill in cold-forging is illustrated above. This fastening problem called for Quality-Quantity-"Know how." The product illustrated was made with three cold-forging operations plus threading.

Whether your needs call for standard or special fastenings, Scovill "know how" assures uniform quality, no matter how large the order. Today our productive capacity is largely engaged by current war-essential orders on hand. Inevitably the situation changes somewhat from day to day. We want both your present and post-war business as far as present war work permit. Call our nearest office for the current picture as to when and where we can serve you. We know you will appreciate a prompt, frank answer and will recognize the problems we face.



Please pass this on wherever Scovill skill may be of service. Thanks!

SCOVILL MANUFACTURING COMPANY SCREW WATERVILLE DIVISION

WATERVILLE 48, CONN.



NEW YORK, Chrysler Building - DETROIT, 6432 Cass Avenue - CHICAGO, 1229 W. Washington Boulevard - PHILADELPHIA, 18 W. Chelton Avenue Building PITTSBURGH, 2882 W. Liberty Ave. - SYRACUSE, Syracuse - Kemper Insurance Bidg. - LOS ANGELES, 2627 S. Soto St. - SAM FRANCISCO, 434 Brannan St.



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There's no waste motion. Seated comfortably, she picks the card from the wheel—finds or posts her information . . . then quickly snaps the card back on again. With Cardineer, one girl often does the work of two. Actually saves 40% in manpower and time. Compact, portable, holding 6,000 cards in seven removable sections, Cardineer eliminates drudgery in filing, finding and posting. Easily adaptable to your present records. Ready for *immediate* delivery. Used in hundreds of plants where maximum efficiency is the prime requisite. Order now.

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Formerly Diebold Safe & Lock Co. • Branch Offices in Principal Cities PRODUCERS OF METHODS EQUIPMENT AND OFFICE ACCESSORIES



DIEBOLD ARMOR for America's Armed Forces

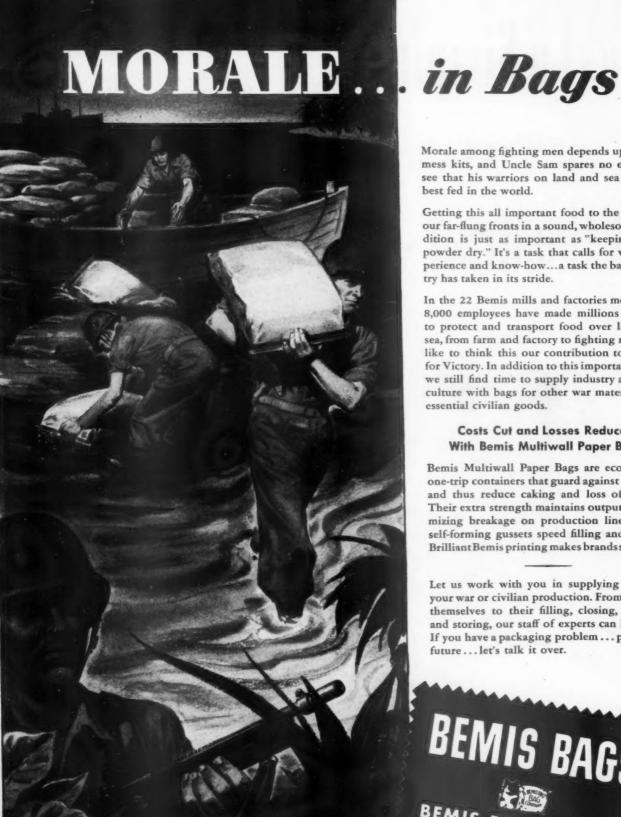
We are operating all our plants 24 hours a day, making ermor plats for U. S. planes, scout cars and half-tracks. ardinee

ROTARY FILES



Buy War Bonds

Nove:



Among the bags produced for war service by Bemis are Multiwall Paper Bags slipped over cloth bags for foods to be shipped over-seas. These packages are especially designed so they can be tossed into the water and carried ashore without damage to contents.

Morale among fighting men depends upon full mess kits, and Uncle Sam spares no effort to see that his warriors on land and sea are the best fed in the world.

Getting this all important food to the men on our far-flung fronts in a sound, wholesome condition is just as important as "keeping their powder dry." It's a task that calls for wide experience and know-how...a task the bag industry has taken in its stride.

In the 22 Bemis mills and factories more than 8,000 employees have made millions of bags to protect and transport food over land and sea, from farm and factory to fighting men. We like to think this our contribution to morale for Victory. In addition to this important work, we still find time to supply industry and agriculture with bags for other war materials and essential civilian goods.

Costs Cut and Losses Reduced With Bemis Multiwall Paper Bags

Bemis Multiwall Paper Bags are economical, one-trip containers that guard against moisture and thus reduce caking and loss of quality. Their extra strength maintains output by minimizing breakage on production lines. Bemis self-forming gussets speed filling and closing. Brilliant Bemis printing makes brands stand out.

Let us work with you in supplying bags for your war or civilian production. From the bags themselves to their filling, closing, shipping and storing, our staff of experts can help you. If you have a packaging problem ... present or future...let's talk it over.

BEMIS BAGS

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READY! Simplified Catalog of G-E Renewal Parts

HELPS GET PARTS FASTER



Quickly identifies needed parts—
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Simplifies ordering by catalog number

Speeds delivery from G-E warehouses or factories

Gives dimensions, descriptions, prices on all parts required most frequently

Includes parts for G-E motors, control, switchgear and other widely used electric equipment; also supplies, such as magnet wire, insulating materials

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NOW, a single book—indexed for easy reference—can take the place of separate handbooks and bulletins for identifying and ordering most G-E renewal parts needed to keep your equipment in operation. With this book, you'll find it easier to order genuine G-E parts by catalog number—saving time all along the line.

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though you don't need it now, it may save precious hours in an emergency. General Electric Company, Schenectady, N. Y.

General Eectric Co., Section AK 750-220 Schenectady, N. Y.

Yes, I want a copy of your new 96-page catalog "Renewal Parts and Supplies (GEA-638)" to help simplify ordering of genuine G-E parts.

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Company

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GENERAL & ELECTRIC



IN the last war smoke screens were laid by clumsy smudge pots. Today a far more effective screen is set up by the smoke generators pictured here in action on an army proving ground.

Thousands of these units, designed by the chemical warfare service of the army, have been produced by the Heil (right-inthe-Fuehrer's-eyes) Company of Milwaukee. Until a very short time ago, these smoke generators were strictly on the "hush" list . . . referred to as "tent heaters" in the Heil shops and office. But now the veil of secrecy has been lifted on one more master stroke of the brand of U.S. ingenuity that always wins.

Mounted on wheels, these smoke generators can keep up with the troops—are even used on landing barges and larger craft clear up to battleships. "Smoke", says the chemical warfare service, "is a primary requisite for camouflage and screening . . . the generators were used extensively in landing operations in North Africa . . . reduced the effectiveness of enemy fire 85%." Similar use of them has been made in the Sicilian campaign . . . confusing enemy fire . . . saving thousands of lives . . . screening vital military installations and supplies.

In these units, as in so many devices essential to modern warfare, Marsh Gauges are playing a vital role. They are one of those products that combines modern design with old-time thoroughness-one of those products that doesn't mind the rough spots on the road to Victory!

JAS. P. MARSH CORP., 2054 Southport Ave., Chicago 14, Illinois



The Gauge with the "RECALIBRATOR"

A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But if it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of resetting, the "Recalibrator" gets at the root of the error-reestablishes the relation of the bourdon tube to the movement—actually recalibrates the gauge.

MARSH GAUGES

The standard of accuracy SING

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THIS LITTLE BLUEPRINT HAS GONE TO WAR!... it's fighting battles right now . . . and helping to win them!

Just a "how-to-make-it" pattern of a molded rubber gadget . . . and not very complicated, as such things go . . . but unless it were made just so, our tanks would not hit so hard nor go so fast . . . nor would they return so often.

Thirty years of experience in precision-molding of rubber goods went into the drawing of that simple blueprint. And our success in adapting what we have learned to the needs of war has resulted in Government orders which run into box car numbers on many of the molded parts we make.

So we ask those of you who are trying to give us orders for civilian goods to bear with us if we are a bit slow in supplying your needs. We want your business and we will do the best we can to fill your orders . . . but at the moment our fighting men are our most important customers and everyone else has to stand in line behind them. Acushnet Process Company, New Bedford, Massachusetts. Processors of Precision-Molded Rubber Goods.

That'

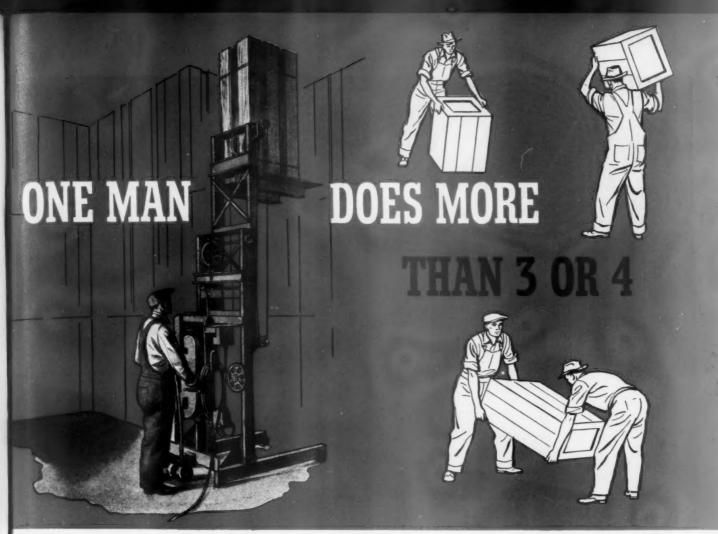
mpor You plant men Barre

Ship worn-out High Speed Tools back to the steel mills grade, steel can do anothe war job. EQUIP YOUR MACHINES with high quality with high gradity tools -that's the way to get accurate, dependable work under the heaviest production schedules.



TWIST DRILL AND
MACHINE COMPANY
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. - - - CHICAGO STORE: 570 WEST RANDOLPH ST.



That's the way you save manpower with a Barrett Portable Elevator—a saving that's doubly mportant today.

You can ease the manpower shortage in your plant with Barrett Portable Elevators and release men for productive work. One man with a Barrett does more than 3 or 4 with ordinary equipment.

In addition, you can save valuable storage

space by stacking goods higher, increasing storage space 200% and 300%—oftentimes more.

These labor- and space-saving economies are vital—especially in times like these. A Barrett Engineer will gladly survey your storage problem—without cost or obligation. Write us.

BARRETT-CRAVENS COMPANY
3280 West 30th Street • Chicago, Illinois

Representatives in All Principal Cities



A post card is the easy way to get your free copy of the Barrett Junior Catalog.





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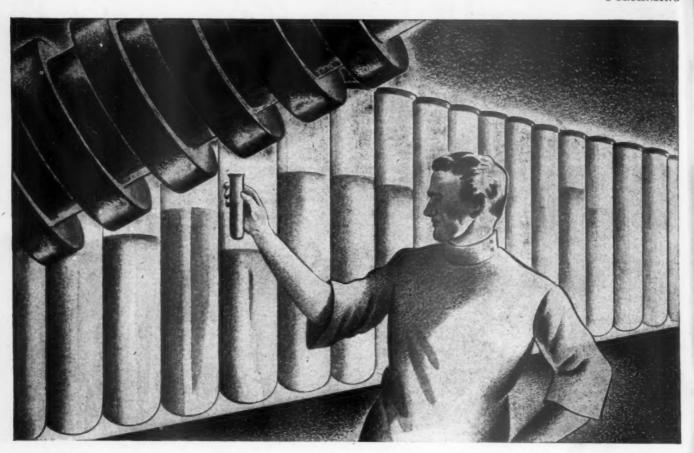
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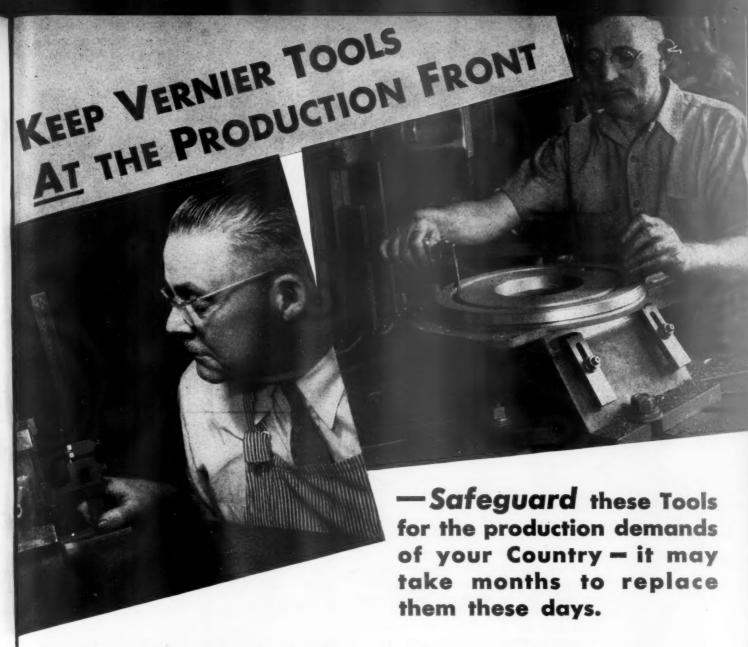


IN 1001 INDUSTRIES

In war industry finishes are more than a beauty treatment. The inexorable demands of war are almost fantastic in their requirements... yet they are being met... surpassed. Modern finishes... many of them still military secrets... add new functions, new properties, new possibilities to the products they protect. War-time finishing experience has already revolutionized many industries... has already CREATED scores of new ones. How will this technological advance affect YOU?

Only an astute examination of your problems in the light of these new facts can tell. It's a job that calls for teamwork . . . and EXPERIENCE. It's a job that should be started NOW . . . while post-war planning is still PLANNING . . . not PLEADING. Your inquiry incurs no obligation. Address The Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . . . East Berlin, Connecticut.

Stanley Chemical



To get the most from your Vernier Tools and to protect them against injury, observe the following simple suggestions:

HANDLE Vernier Tools, particularly large tools, with extreme care.

Before moving the sliding member of a Vernier, WIPE THE BAR thoroughly. Dirt carried by the slide can damage graduations and interfere with the operation of the tool.

WHENEVER REPLACING sliding member on the bar, be sure that the gibs are not reversed from their original positions.

GUARD against the effects of heat on the accuracy of Vernier Tools. Hold in the hands as little as possible and do not place them near steam pipes, in sunshine or by other heat sources.

DO NOT TOSS Vernier Tools loosely into a drawer or drop them, as sudden shock can cause unsuspected damage and misalignment. Keep them covered for protection when not in use.

Remember that every Vernier kept in useful service helps to make a **new** one available where it may be needed urgently for our united war effort.

Reproductions of this advertisement for use on your bulletin boards furnished on request.

BROWN & SHARPE TOOLS

THE SAW IS MIGHTY
FOR WAR SUPREMACY

• E. C. Atkins and Company has been entrusted with the responsibility of keeping saws cutting tirelessly in thousands of plants. For, in this war, the saw which cuts the numberless parts which go into mechanized armaments is a tool of paramount importance. Every weapon, machine or instrument of war begins with a cutting stroke.

We are proud to report the use of Atkins Saws in many new plants cutting new materials, with the success to be expected of 86 years of experience. Combined with experience are numerous practical demonstrations by 'Atkins engineers—all with a view to getting the right tool on every specific cutting job.

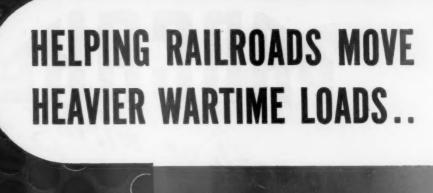
In the metal cutting field, saws of the "Curled-Chip" design have set new high standards of metal cutting saw performance. Atkins Engineering extends to other fields—to the timber industry with equipment like the new Electric Tree Faller—to supplying saws for technical units ashore, affoat and aloft, >

Thus is Atkins' all-out production meeting the demands of all-out war.

E. C. ATKINS AND COMPANY
446 South Illinois Street
Indianapolis, Ind.

Cutting a Name for Themselves
IN EVERY PHASE OF WAR PRODUCTION





Talon's Electric Welded
Steel Tubing

SIZES FROM $\frac{5}{8}$ " O.D. TO 4" O.D. UP TO 40' IN LENGTH

This illustration shows Talon's Electric Welded
Steel Tubing being used in boiler construction
by the Lima Locomotive Works for the Central
of Georgia Railway.

Talon's Electric Welded Steel Tubing has characteristics which are particularly well suited to locomotive boilers. It withstands the terrific high pressure and structural strain which locomotives are undergoing to haul heavier wartime loads more rapidly. Cold-formed from flat-rolled steel, Talon's tubing is concentric and uniformly accurate to size for easy installation. Proper normalizing provides maximum ductility for expanding and beading, and increases physical properties.

There are no thin, weak spots in the wall of Talon's Electric Welded Steel Tubing ... accurate gauge of the steel determines uniform wall thickness. No extra metal is added in welding ... grain structure of wall and weld is homogeneous. Hydrostatic testing of every foot of Talon's Pressure Tubing is your assurance that the weld and adjacent area are as strong as the wall. Sizes from 5%" to 4" O.D.

are available in lengths up to 40 feet.

PRESSURE

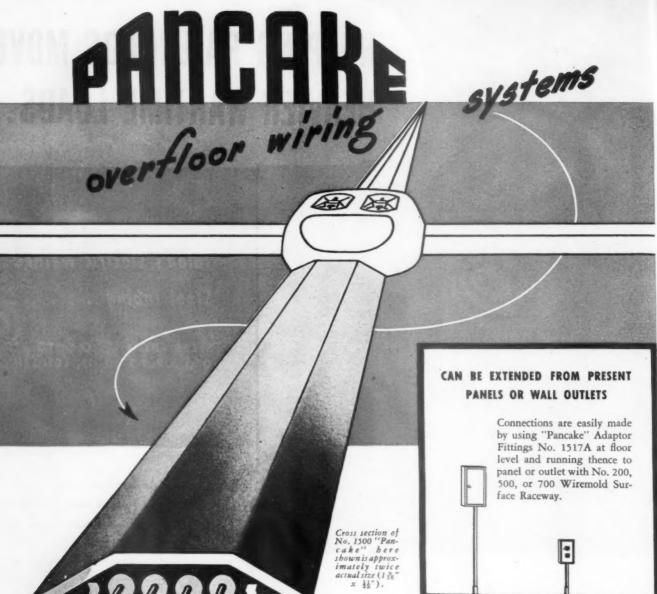
MECHANICAL

TALON . . INC.

STEEL TUBE DIVISION

OIL CITY, PENNA.

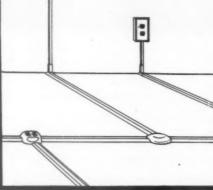
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Every architect, industrial engineer, plant or office manager knows that floor space represents investment... potential production capacity. Wiremold "Pancake," easily and quickly installed over any floor..."half a heel high and strong as a bridge"... trip-proof and unobtrusive... simplifies efficient planning. Two sizes and few simple fittings meet every requirement in carrying light, power or telephone and signal system wiring to

desks, benches, office machines, factory hand tools and work lights, etc. Interconnects with existing wiring.

Know about this important Wire-mold aid to efficient operation... readily extended or relocated for later needs. Conforms to Federal Specification W-R-32; listed by U.L. Available on suitable priority for essential installations. The Wiremold Company, Hartford 10, Conn.



Write for latest "Pancake" bulletins and engineering data sheets.



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WOREMOLD GAN HELP YOU PRODUCE FOR WAR... AND PLAN FOR PEACE



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And that's why "floored" shipping boxes must support many more pounds per package.

One case for better packaging rests on that fact. Crushed shipping boxes mean damaged merchandise. That means waste of materials, manpower, time and shipping space... waste that can be greatly curtailed by use of sturdy corrugated boxes engineered to meet the new conditions.

Ask an H & D Package Laboratory to check your shipping boxes. A few pennies more in the right place may enable you to cut losses enormously.

Protect the Product

BETTER SEE WED AUTHORITY ON PACKAGING

PACKAGING "TEXT-BOOKLETS" FREE



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Here's a handy source of practical shipping information to help you solve day-to-day shipping problems. It will pay you to take this "refresher-course" in packaging. The cost? A ponny post card. Mail your requests to . . .

HINDE & DAUCH, Executive Offices: 4323 Decatur Street, Sandusky, Ohio

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G-E Research packs a lot of light into General Electric Mazda lamps.

The constant goal is to make them stay brighter longer.

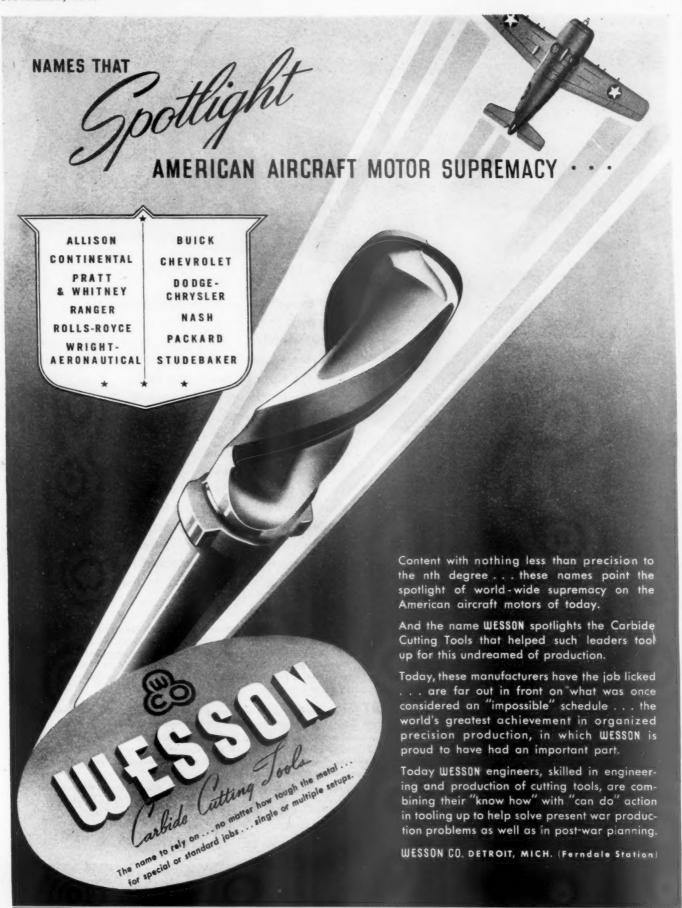
You'll get more benefits from this research if you keep light bulbs clean... avoid shadows and glare... turn out lights not in use.

Hear the General Electric radio programs: "The G-E All-Girl Orchestra," Sunday 10 p. m. EWT, NBC; "The World Today" news every weekday, 6:45 p. m. EWT, CBS.

G-E MAZDA LAMPS

GENERAL # ELECTRIC

THE BEST INVESTMENT IN THE WORLD IS IN THIS COUNTRY'S FUTURE — BUY WAR BONDS



WHEN THE LIGHTS GO ON AGAIN all over the world, war-acquired precision will turn spotlights on those manufacturers who apply the benefits gained by using WESSON Carbide Cutting Tools... to machine the modern tougher metals

better, at less cost . . . with fewer, simpler set-ups . . . with bigger bites of metal at greater speeds . . . with greater precision, finer finishes . . . for the good of all humanity and a better world in which to enjoy Peace!

Who knows? No package of comparable size and modesty is so rightly filled with treasures.

So far, we have found gas masks and boats, signs that warn of danger and direct our pursuing armies along the route of the fleeing foe.

We have found working drawings of amazing clarity and maps that survive duty in the field. We have found identifying tags that stay with parts despite long routes and much handling.

We have found combinations for developments with plastics; book cloths that defy climatic deterioration; and linings for shoes that keep our armies moving on the best marching feet in the world.

These things, and many more, we already have found in a bale of cotton. But the search goes on because HOLLISTON MILLS have dedicated their experience and resources first, to discovering more that processed cotton cloths can contribute to the war effort and, second, to the advancement of industry.

CURRENT HOLLISTON PRODUCTION includes COATED AND IMPREGNATED FABRICS, mildew proof... fire, weather and water resistant... gas impermeable, etc. INSULATING CLOTH BASE... SEPARATOR CLOTHS rubber, starch-filled, glazed. TRACING AND BLUE PRINT CLOTHS white and blue, ink or pencil. MAP CLOTH, PHOTO CLOTH, self-adhesive. REINFORCING FABRICS. SIGN, LABEL AND TAG CLOTHS, waterproof to take any ink, meet any inking problem. BOOK-BINDING CLOTHS. SHADE CLOTH, impregnated waterproof, opaque, translucent or light proof.

IN DEVELOPMENT: Mildew-proofing and asphalt-impregnating processes; fire and weather-resistant treatments; synthetic resin fillings and coatings applicable from nettings to duck.

In general, HOLUSTON can convert any print cloth, sheeting, twill and duck in widths from 30" to 80" and can dye, impregnate, coat and fill in any color to specified stiffness or pliability, hand, bond, weight addition and tensile strength, including Elmendorf tear strength, for any trade, commercial or industrial use. We have both the wish and the capacity to cooperate on production problems.

We urge you to consider CLOTH; and invite you to consult with us concerning possibilities and developments for your specific requirements.

THE HOLLISTON MILLS, INC.

CONVERTING CLOTHS TO GREATER USE FIELDS

NORWOOD, MASSACHUSETTS

Sales Agents in Principal Cities



THAT WAVE DEFEAT TO THE ENEMY

The flags which fly from the Weatherhead mast are symbols that Weatherhead employees are backing our fighting forces everywhere.

We take pride in the fact that our employees make possible the flying of these flags which spell . . . "Defeat to the Enemy."

1. The Star Spangled Banner... for all that it represents in loyalty and patriotism.

2. The Army-Navy E-Award . . . for doing more than seemed possible in the production of war equipment essential for victory.

3. The Minute Man Flag . . . signifying a pledge to buy War Bonds by regular payroll deductions.

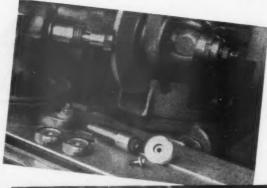
THE WEATHERHEAD COMPANY . CLEVELAND, OHIO Branches: Detroit . Los Angeles . New York . St. Louis

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WORLD'S LARGEST PRODUCERS OF FITTINGS AND FLEXIBLE HOSE ASSEMBLIES

PLANTS IN CLEVELAND, OHIO . COLUMBIA CITY, INDIANA . LOS ANGELES, CALIFORNIA . ST. THOMAS, ONTARIO, CANADA









Every hour this war is shortened will save \$12,000,000. The lives it will save are priceless. Let's get it over with — quickly.





TO keep war production up to quota, industry needs tools, lots of them—and lots of grinding wheels to keep them sharp. There's enough steel and abrasives to do the job—but only if every man on a grinding wheel uses the proper procedure in sharpening tools. Otherwise precious steel is wasted, and grinding wheels are used up too fast. Here are a few rules to remember that will help you "treat 'em right."



Use the correct wheel for the job. It is essential that the correct grain type and size, structure and grade and the proper bond be used. The Carborundum Representative will be glad to help make your selection.

Keep grinding wheels sharp. Dress frequently with the proper dressing tool.

Sharpen tools frequently. Don't wait until they are very dull. You may waste tool steel by taking off too much stock and lose production. Sharpen them after a specific number of cuts—even if they don't seem to need it.

Control tool form. Proper tool performance can only be obtained by maintaining correct rake and clearance.

Use light grinding pressures. You may burn the tools. Edges may become soft from overheating.

Use the right equipment. Use only machines for reconditioning tools which are designed for the job.

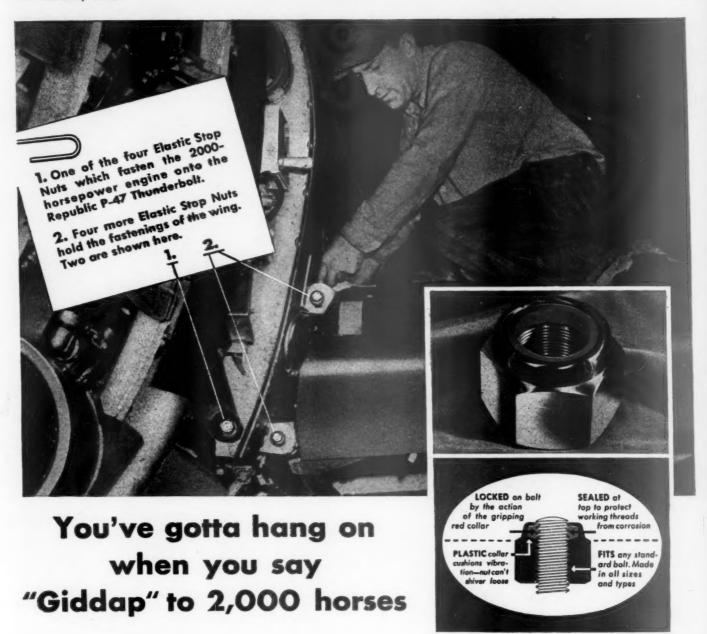




THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

MANUFACTURERS OF GRINDING WHEELS, COATED ABRASIVES, SUPER REFRACTORIES, HEATING ELEMENTS

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids (Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company)



When the pilot of a Republic P-47 pours on the soup, 2,000 surging, throbbing horsepower yank him into the high blue heavens.

When he climbs straight up he is literally hanging on his prop and engine.

And those tons of plane, man and armament hold onto that engine with just four Elastic Stop Nuts.

This is the kind of job that has given Elastic Stop Nuts the reputation of having revolutionized modern aircraft construction. It's the reason you find over 12,000 of them on the P-47 and as many as 50,000 on some types of bombers.

It's all because these nuts hold fast—without auxiliary locking devices. They're applied like ordinary nuts. They can be removed and replaced time and again without losing locking effectiveness. They stay put, and nothing, even violent vibration, shakes them loose.

It's done by the red elastic collar in the top. This collar clings tightly around the bolt threads. It absorbs and cushions vibration from every direction. The nut can't shiver loose — can't turn.

Postwar progress will present countless fastening problems which these nuts will solve. Perhaps you already are studying such problems. If so, let us know about them. Our engineers will be very glad to help work out a solution and show you how an Elastic Stop Nut will provide a safer, surer, trouble-free fastening.

ELASTIC STOP NUTS

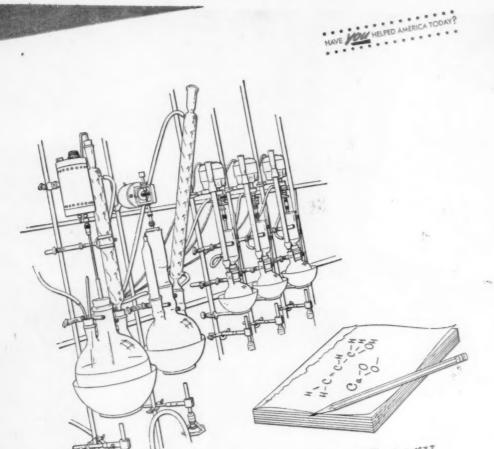
Lock fast to make things last



ELASTIC STOP NUT CORPORATION OF AMERICA
UNION, NEW JERSEY AND LINCOLN, NEBRASKA

No

FOR VICTORY BUY MORE WAR BONDS



Formula for Victory in a happier post-war world, the most amazing and beneficent are those which will emerge as the result of spectacular

discoveries in chemical research laboratories. In the nation's great chemical plants, a thousand mystical-Columbia is proud to be part of the great chemical appearing symbols merge into a single great Formula for industry . . . and to salute the achievements of its fellow Victory. Countless products vital to winning the war are members in providing a Formula for Victory! dependent upon the tremendous, unprecedented production

Munitions? Of course. But the "greenhouse" in which the bombardier sights his target . . . the billowing smoke of chemicals. screen which foils the enemy . . . the sulfa drug which minimizes serious wounds . . . the flare which illuminates a happy landing . . . the pill that purifies the stagnant water of a steaming jungle—these and thousands of other war essentials would be but wishful fancies without chemicals.

And of all the marvelous dreams which will materialize

PITTSBURGH PLATE GLASS COMPANY COLUMBIA CHEMICAL DIVISION GRANT BUILDING . SI. Lovis . PHYSBURGH (191, PA.
Chicago . Boston . SI. Lovis . PHYSBURGH . New York

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CHEMICALS

SILENE E F (Hydrated Calcium Silicate) . CALCIUM CHLORIDE
NE (Precipitated Calcium Carbonate) . CALCIUM HYPOCHLORITE COLUMBIA LIQUID CHLORINE SODIUM BICARBONATE SILENE
ODAS CAUSTIC ASH PHOSELAKE CALCENE (Precipi CAUSTIC SODA . LIQU TES . MODIFIED SODAS

SODA ASH . CAI SODA BRIQUETTES Business Week . . . Oct. 9, 1943

COLUMBIA



CHEMICALS



One million planes will be in active service by

1950, reports the Civil Aeronautics Adminis-

tration, sure indication that the cargoes of

the future will go by air-Gair con-

tainers have proven to be ideal where

weight is the first consideration

. . Consult our engineers

Robert Gair Company, Inc.

New York-Toronto

Save Waste Paper for War Production



LEARN | ULE FACTS

about Your Production!



THESE APPLICATIONS

Here are just a few of the temperature points where Foxboro Recorders can give you valuable "inside" facts:

BOILER ROOM EQUIPMENT DRYERS

INDOOR TEMPERATURES OIL STORAGE

OUTDOOR TEMPERATURES

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PLATING AND PICKLING TANKS

STEAM LINES

STORAGE ROOMS

WATER SUPPLY, HOT AND COLD

your process temperatures! Somewhere in your plant, is an unknown temperature fluctuation preventing high production efficiency

can be improved.

Get these important facts, continuously and inexpensively, by installing automatic temperature recorders at every critical point. Get them accurately and dependably by specifying Foxboro Temperature Recorders!

Foxboro Temperature Recorders are precisionengineered to meet toughest industrial needs for accuracy, endurance and trouble-freedom. Their ultrasensitive thermal system reacts instantly to slightest temperature changes. Their light, strong recording mechanism "writes it down", day-in day-out for years, without attention except routine chart replacements!

Write for Bulletin 198-2 containing the full story of these automatic watchmen for your temperature operations. The Foxboro Company, 178 Neponset Ave., Foxboro, Mass., U.S. A. Branches in principal cities of United States and Canada.



TEMPERATURE RECORDERS



Call us for General Purpose Steels

Our business is to help you keep war production moving, so if you need steel we'll get it to you in a hurry if at all possible—subject, of course, to priority restrictions. We can't always fill all requests because of material shortages, but a call to us has solved many a supply problem. If you need steel, steel products, machinery or equipment, try us. Write, phone or wire our nearest warehouse. You will get prompt, courteous attention.

We Welcome Inquiries On National Emergency Alloy Steels

These new steels have made it possible to meet many critical conditions imposed by the shortage of strategic alloys. They have given satisfactory results—in fact, have sometimes performed even better than the steels previously used.

We'll gladly assist you in determining the grades best suited to your needs. Get in touch with our nearest warehouse,

Aircraft Steels

These steels are for use in airplanes and available at our Chicago Warehouse only. This warehouse has been designated by the War Production Board as a warehouse to distribute the aircraft steels listed below.

WD-X-4130 SHEETS

Open Hearth, Normalized, Pickled and Oiled to Spec. AN-QQ-S-685, Condition N. All gauges .016 to .50, sheets 18 x 72".

STAINLESS SHEETS

Spec. AN-QQ-S-772. Spec. AN-QQ-S-757.

NE-8630 SHEETS

Open Hearth, Normalized, Pickled and Oiled to Spec. AN-S-12, Condition N. All gauges .016 to .50, sheets 18 x 72".

STAINLESS STEEL BARS

Spec. AN-QQ-S-771.

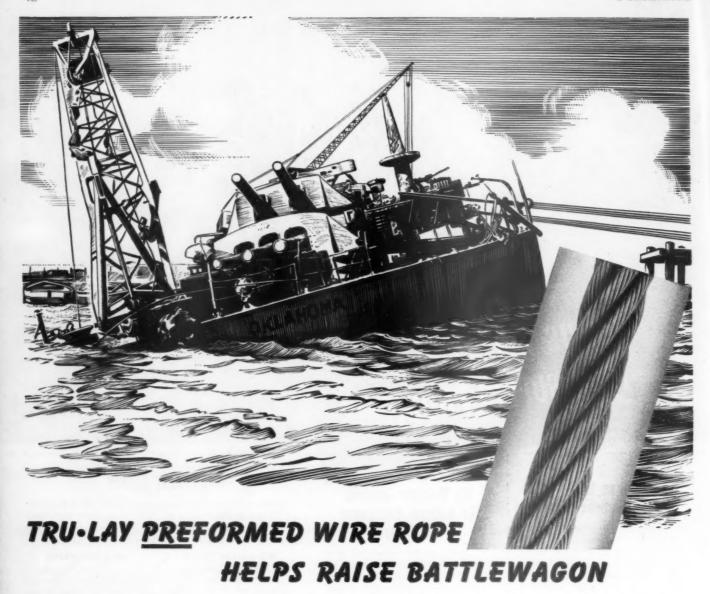
Write, phone or wire, if you are eligible for these steels.



Send for a FREE copy of our new Stock List and Reference Book—just off the press.

CHICAGO (90),	1319 Wabansia Ave., P. O. Box MM	Teletype CG. 605	BRUnswick 2000
BALTIMORE (3),	Bush & Wicomico Sts., P. O. Box 2036	Teletype BA. 183	GILmore 3100
BOSTON (34),	176 Lincoln St., Allston, P. O. Box 42	Teletype BRTN. 10	STAdium 9400
CLEVELAND(14),	1394 E. 39th St.,	Teletype CV. 153	HEnderson 5750
MILWAUKEE (1),	4027 West Scett St., P. O. Box 2045	Teletype MI. 587	Mitchell 7500
MEWARK (1), N.J.,	Foot of Bessemer St., P. O. Box 479	Teletype NK. 74 REctor 2-6560	Bigelow 3-5920 - BErgen 3-1614
PITTSBURGH (12),	1281 Reedsdale St., N. S.	Teletype PG. 475	CEdar 7780
ST. LOUIS (3),	21st & Gratiet Sts.,	Teletype SL. 384	MAin 5235
TWIN CITY,	2545 University Ave., St. Paul (4), Minn.	Teletype STP. 154	NEster 2821

UNITED STATES STEEL



THE U.S.S. Oklahoma lay on the bottom of Pearl Harbor with a list of 151 degrees. Salvage, carried out by the Pacific Bridge

Company, required 40 miles of Tru-Lay Preformed wire rope, supplied by the American Chain & Cable Company, Inc. After 69 operating hours, the Oklahoma was lifted within 10½ degrees of its natural position.

This spectacular job was aided by Tru-Lay Preformed wire rope made by our American Cable Division. Other equally important

tasks have been implemented by Lay-Set <u>Preformed</u> made by our Hazard Division.

Wire rope is only one of many

National Safety Council Suggestions For Handling Wire Rope

- Stretch rope in use before giving it full load—stay within rated capacity.
- 2. Use sheaves of proper size, properly aligned.
- Avoid crosswinding rope on drums and sudden starts or stops.
- Avoid dragging rope on ground or exposing to heat, moisture or acid fumes.
 Keep rope properly lubricated; it prolongs
- its life.

 6. Use the best of clips or fittings, and attach
- Use the best of clips or fittings, and attach them properly.
- 7. Never put strain on a kinked rope.

products we make for Industry, Agriculture and Transportation, essential in peace, vital in war.

Workers in industry need instructions in the right ways to handle wire rope for their own safety. We recom-

mend the basic suggestions at the left, prepared by the National Safety Council.

The American Chain & Cable Company heartily cooperates with the National Safety Council in its nation-wide campaign to "Save Manpower for Warpower"—now being conducted at the request of President Roosevelt.

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley

Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cody Valves, Wright Hoists and Cranes



ATIONAL cutting tools are fighting tools. They are built to take it—to stand up when the production pace is pressing.

Even the toughest tools produce more work with proper care. That's why the craftsmen who make National tools ask you to sharpen them regularly, be generous with the coolant. Work them hard but work them right!





TWIST DRILLS
REAMERS, HOBS
MILLING CUTTERS
COUNTERBORES

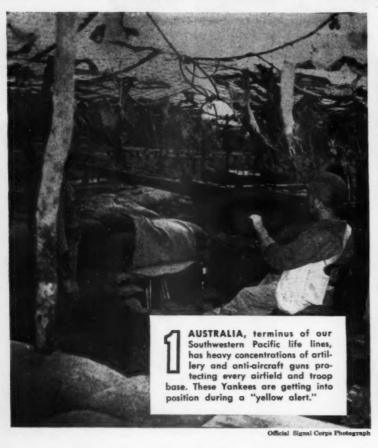
TWIST DRILL AND TOOL COMPANY

HOME OFFICE AND FACTORY—DETROIT, MICH.

Tap and Die Division-Winter Brothers Co., Wrentham, Mass.

Factory Franches • New York • Chicago • Cleveland • San Francisco • Distributors in Principal Chicago

FAMOUS LIFE LINES





As RINGS of men and steel tighten around the Axis, its leaders must realize the fatal mistake they madea total failure to understand Allied ability to keep life lines of supply open, and to bring war to the enemy's doorstep.

When the noose has choked the last dictator, American factories will pour out a flood of new and better products-and in them "life lines" of Bundy Tubing will find thousands of uses for peacetime, as they now do for war.

Already, Bundy engineers see new

and practical applications for scores of industries-tubing to strengthen and improve structural parts, as well as to transmit power and pressure, and carry gas, oil and refrigerants.

Your post-war products may well benefit from all the "life line" engineering for tanks, trucks, ships and planes. Why not write us? Let's do some thinking and planning together.

When the time comes, we'll be ready to turn out miles of tubing to help you build better products at lower cost. Bundy Tubing Company, Detroit, Michigan.



Official U. S. Navy Photogr

U. S. NAVY MINESWEEPERS, like so many craft ranging in size from landing boats to battleships, have many "life lines" of Bundy Tubing. Wherever and for whatever purpose tubing is used, there you are apt to find Bundy.

> Buy U. S. War Bonds Get in Your Scrap



ENGINEERED TO



YOUR EXPECTATIONS







BUNDY "TRIPLE-PURPOSE" tubing. Double-walled, rolled, from two strips, joints opposite, welded into a solid wall. Available in all Momel; all steel; Monel in-side—steel outside; Momel outside—steel inside. Sizes up to and including %" O. D.



YOUR PRODUCT, TOO, MAY BE IMPROVED through a "Partnership"

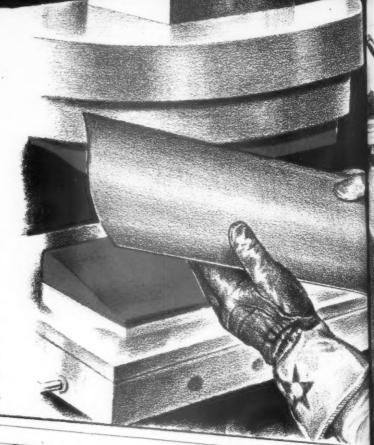
These products and many hundreds more were each improved through a "partnership" of knowledge. Your company, for example, possesses a wealth of product experience and manufacturing know-how. Hercules, on the other hand, has acquired in the past 30 years a vast storehouse of chemical knowledge. By sharing this knowledge with each other, your products and ours may be made better, more swiftly, more thriftily. Similar "partnerships" have produced tougher tires; longer-lasting cements; more powerful insecticides; better textiles, plastics, paints, papers; and an endless list of articles. Perhaps we can furnish you with technical data, literature, or assistance on some specific problem. Write Hercules Powder Company, Inc., Wilmington, Delaware.

New type plastic tools save manpower and metal

A new ethyl-cellulose based thermoplastic—cast like molten metal into forming blocks, drill jigs. stamping dies, and other tools—is speeding up the manufacture of aircraft parts and saving large quantities of metal.

These new plastic tools—capable of withstanding repeated hydraulic press and drop hammer pressures as high as 2 or 3 tons—are only one-sixth the weight of ordinary metal tools. They also permit lower casting temperatures and more exact mold dimensions . . . resulting in less

machining and a 33% saving in forming time. The plastic tools may be recast and re-used several times. At the present time ethyl cellulose is so critical that its use for these tools is allocated to only the aircraft industry. Hercules will be glad to furnish you with names and addresses of producers of this plastic. Write Cellulose Products Department, Hercules.



New Stabilized Rosin.

Hercules has now DEhydrogenated natural rosin to form a more stable material with increased resistance to light and oxygen.

Called "PERMEX," this new dehydrogenated material is similar in its characteristics to Staybelite*, Hercules hydrogenated rosin. At the present time, "Permex" is available in small amounts only. Naval Stores Department.

Bad News for Flies



Recently concluded at Kansas State College was a 3-year test on cattle and commercial insect sprays. In these tests, Thanite*, the new toxic agent for insecticides developed by Hercules, showed greater knockdown and killing power than any other toxic agent tested. The investigations have also shown that Thanite sprays offer longer-lasting repellency, are non-toxic and non-staining even in high concentrations, and leave no residual odor or taste to foods.

These and other findings are to be included in a new book now being prepared. If you would like us to send you a copy of this book as soon as it is published, or if you wish technical data regarding Thanite immediately, write Naval Stores Department, Hercules Powder Company.

*Reg. U. S. Pat. Off. by Hercules Powder Company

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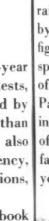


Plastic-coated fabric visible 2 miles

These brightly colored panel fabrics of the Signal Corps help identify the U.S. motorized equipment to our own airmen. Reflecting 90% of light, the glaring red, white, or yellow plastic-coated fabrics are clearly visible two miles. Ethyl cellulose is the plastic coating which meets the Army's stringent tests: No cracking or peeling at 20° F. below zero, or 140° F. above with 95% humidity . . . No sign of stickiness, no bleeding of color-even at 200° F. For further information regarding ethyl cellulose, the plastic of many war uses, write Cellulose Products Department.

Paper Boxes meet demands of Global War .

Dropped in salt water, skidded on rough loading docks, exposed to hot tropical suns and drenching rains—these are only a few of the hardships endured by a new type of paper carton. On practically every fighting front, these super containers are making year spectacular packaging history. They are constructed of high-sized fiber board containing rosin size and Paracol* and were developed by the paper-board industry. The Paper Makers Chemical Department of Hercules was glad to contribute experimental facilities and the technical knowledge gained through years of research for the paper industry.

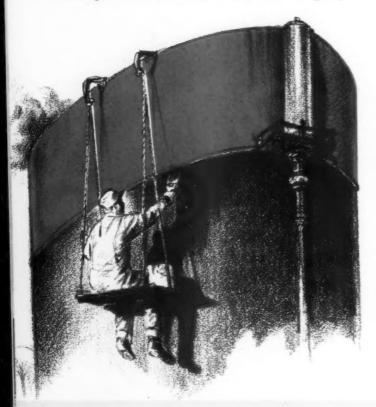


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A possible answer to solvent shortage for lacquer

Many lacquer manufacturers, seriously handicapped by the current shortage of ester solvents, are welcoming the recent re-introduction of Hercules SS Nitrocellulose. Almost soluble in ethyl alcohol, SS Nitrocellulose becomes a clear solution by simply adding a very small amount of some active solvent. Since offering trial samples to the industry several months ago, repeat orders of sufficient volume have been received to indicate its usefulness at this time. The supply of SS Nitrocellulose is ample and free of Government allocation. We shall gladly send you further information upon request. Use coupon below. Cellulose Products Department, Hercules Powder Company.





Hard varnishes from soft oils

Pentalyn* Resins - the Hercules pentaerythritol esters of selected rosins-are forming excellent varnishes with soft-drying oils such as linseed, or with dehydrated castor oils. At present, these varnishes are satisfying rigid strategic requirements—such as in salt-spray-resistant, marine spar varnishes.

Pentalyn varnishes combine the desirable properties of fast-cooking, rapid-drying, unusual hardness, alkali-resistance, and pale color. Because they are equally satisfactory with both linseed and dehydrated castor oil, manufacturers can now take advantage of changes in the supply situation . . . For technical information, address the Synthetics Department, Hercules Powder Company, Wilmington, Delaware.

*Reg. U. S. Pat. Off. by Hercules Powder Company

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1922	Delaware	Trust	Building,	Wilmington	99,	Delawa
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HERCULES POWDER COMPANY



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STREET SCENE - 1947

when will total Victory come? No one knows, but this is certain: inexorably, retribution draws nearer the monster minds that opened the floodgates of war and drenched the world in blood and sweat and tears. America's armed might and the astounding production performance of Industry leave no doubt as to the final victory. The Joyce Machine Company is grateful for the privilege of contributing materially to Industry's proud record, with millions of dollars worth of assemblies and precision parts for America's lead-

ing war plants—and for the Army and Navy as well.

When Victory comes, Americans will once again take up their normal pursuits—and normal buying habits. They will look for products long denied them by the exigencies of war-making. And they will have ample funds with which to satisfy their peace time needs. Will you be prepared to fill those needs—or at least be able to start on an even footing with competitors? The broad experience and innate ingenuity of Joyce's engineering staff may prove a

pay lode for you in planning production of your postwar products. If it can be made better, faster or cheaper, Joyce "know how" will find the way. A Joyce representative will be glad to explain in detail the many advantages we can offer.

★ Buy Bonds Here —

Untie the Bonds Over There

★



BEHIND THE MAN DEHIND THE MAN DEHIND THE GUN

Out of War Plant Experience is Coming More and More Proof!

Essential to Good Plant Lighting Are Many Types of Lighting Units

IN thousands of war plants where Benjamin Lighting Equipment is installed, the benefits of good lighting are evident daily in improved workmanship . . . increased production . . . increased safety . . . reduced spoilage . . . and high employee morale.

Experiences of war plants throughout the country demonstrate the results which are secured with the correct application of the many types of Benjamin Lighting Equipment. The list of war plants using Benjamin Lighting Equipment includes every type of plant, large and small, engaged in the manufacture of every type of product—machine guns, aircraft, ships, guns, tanks, ammunition, powder, food, chemicals, clothing and every other-product used by our armed forces. A complete

list of these plants would cover many pages; only a representative list is shown below.

Further, Benjamin is furnishing large quantities of Marine Lighting Equipment, Wiring Appliances and Communication Devices for use on Navy and Merchant Marine ships.

Benjamin Illumineering Insures Proper Lighting of the Seeing Tasks in Your Plant

Benjamin *Illumineering* is one of the important Benjamin contributions which is helping America's War Industries to make certain that they are securing the kind of lighting required for increased production, Benjamin *Illumineering* gives you the assurance that the lighting units recommended are correct in design, and are

properly selected and installed to meet the requirements of the specific seeing tasks from the viewpoint of Sufficient Light, Quality of Lighting, Light Distribution, Light Diffusion, Light Control and Shielding

Enlist Benjamin's Experience

Benjamin Lighting Equipment and Benjamin Illumineering are available now to help you to improve the seeing conditions in your plant. Write today for a copy of the Benjamin Booklet: "PRODUCTIVE LIGHTING FOR WAR PLANTS," outlining procedure for checking lighting conditions in your plant and giving specific data on how to solve many lighting problems common to industrial operations. It will be sent to you without cost or obligation. Address Benjamin Electric Mfg. Co., Dept. Y₄ Des Plaines, Illinois.

BENJAMIN

Lighting Equipment

Distributed Exclusively Through Electrical Wholesalers

Among the Benjamin units being provided to war industries are those illustrated here which are. The BENJAMIN RLM DOME REFLECTOR, The BENJAMIN ELLIPTICAL ANGLE REFLECTOR. THE BENJAMIN TYPE "Y" FLUORESCENT LIGHTING UNIT, The BENJAMIN DUST TIGHT UNITS, and The BENJAMIN EXPLOSION-PROOF UNITS.

These Manufacturers Know
What Benjamin Good Lighting
Means to War Production

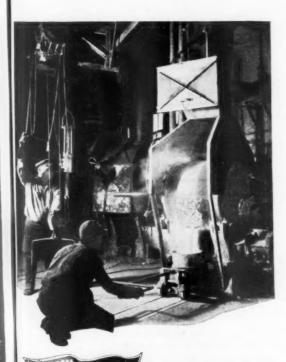
Means to War Production Western Cartridge Company . . . Aluminum Ore Company Shell Oil Company, Incorporated . . . Cessna Aircraft Co. Granite City Steel Company . . . Monsanto Chemical Company . . . Hercules Powder Company . . . Abbott Laboratories Remington Arms Company, Inc. . . . Beech Aircraft Corporation . . . Allis-Chalmers, Manufacturing Company Boeing Aircraft Company . . . Dow Chemical Company . . . General Motors Corporation General Electric Company building Corporation bon Company, Inc. Pressed Steel Car Cor ny . . . Winchester Repeating Arms Company . Pratt & Whitney Aircraft American Sme Anaconda Coppe Company . . . Bridgeport Brass Company . . . Worthington Pump & Machinery Corporation North Carolina Shipbuilding Company . . . United State Rubber Company . . . Liggett & Myers Tobacco Company Electric Boat Company . . . Aluminum Company merica . . . Western Electric Company, Incorporated Caterpillar Tractor Company . . . RCA Manufacturany, Inc. . . . International Business Machines Corp.

Bendix Aviation Corporation . . . Johns-Manville Company Bell Aircraft Corporation

Mathieson Alkali Works . . . American Locomotive Company Otis Elevator Company

Bethlehem Steel Company Mathieson Alkali Works . . . American Locomotive Company . . . Otis Elevator Compan h Register Company Douglas Aircraft Company, Inc. . . . Goodyear Tire & Rubber Company . . . Nat Republic Steel Corporation . De Vilbiss Company . . . Willys-Overland Motors, In Truscon Steel Company Trojan Powder Comp Chicago Flexible Shaft Con y...Toledo Shipbuilding Company, Inc...Libbey-Owens-Ford Glass Company ny...Zenith Radio Corporation...Kaiser Company...Basic Magnesium Incorporated Lockheed Aircraft Cor . North American Aviation, Incorporated . . . Sperry Gyroscope Company, Inc. American Can Los Angeles Shipbuilding & Dry Dock Corporation . . . Armour & Company . Kankakee Ordnance Plant . . : White Motor Co. . . . Jack & Heintz, Inc. Newport News Shipbuilding & Dry Dock Co. . . . The Geometric Tool Company . . . Vought-Sikorsky Aircraft Div.





CASTING brass has been an important part of Crane production since R. T. Crane first opened his little bell foundry back in 1855.

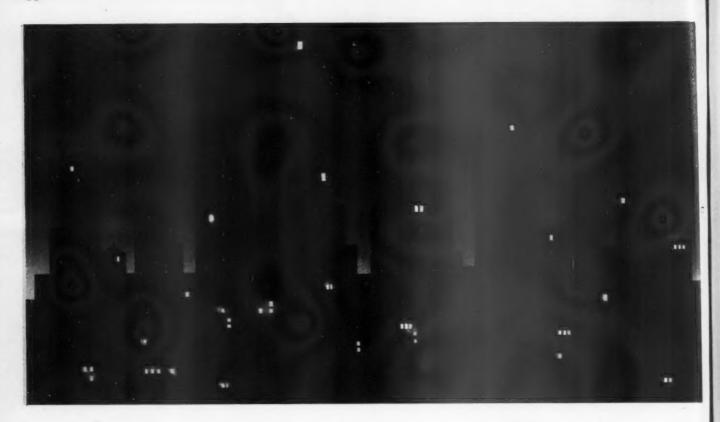
Today, in the great Chicago Works of Crane Co., tons of this critical metal are daily being cast into the valves and fittings that the Army, Navy and industry need to speed the day of Victory.

Valves are so important in mechanized war that it takes tremendous capacity to keep pace with the increasing demand—and production at Crane Co., the world's largest maker of valves, has been stepped up to fill the nation's needs.

An industrial America at peace will need valves, too, in tremendous volume—the same high quality valves Crane is today producing for war. When that time comes, manufacturers can look forward to quantity production of flow control equipment, backed by the added experience of manufacturing "know hows" that Crane has acquired in meeting the unprecedented demands that war entails.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Illinois

CRANE VALVES



what happens when the lights go on?

WHICH?

Balanced Inventory

- 1. Only critical parts acceptable for use
- 2. Orderly known facts for conversion
- 3. Profitable conversion
- 4. Government acceptance

PROFIT!

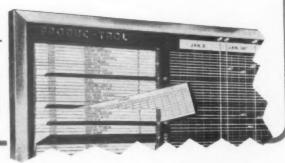
Unbalanced Inventory

- 1. Shop Chaos
- 2. Too much of this
- 3. Too little of that
- 4. 4275 gears
- 5. 516 shafts
- 6. 872 special castings
- 7. 20,000 small parts
- 8. Labor and material to produce these-total loss

SCRAP!

PRODUC-TROL will not only speed your war production NOW, but will keep your inventory balanced. And when the lights go on, your enlistment with the other 2000 manufacturers using PRODUC-TROL will be ready to convert your war machine to peace-time production quickly and effectively.

PRODUC-TROL shows in comparative form all the facts at once in engineering design, procurement, production, delivery schedules, personnel incentive, sales records, etc.





SEND TODAY FOR YOUR COPY OF "SPOTLIGHT" — A real aid to efficiency in production planning and control.

Produc-trol

PICTURES FACTS FOR ACTION

If "information" cannot give you the telephone number of PRODUC-TROL in your city, phone, wire or write —

WASSELL ORGANIZATION
WESTPORT, CONN. • Phone: WESTPORT 2 - 4112

In Canada: Seeley Systems Corp., Ltd., Toronto and Montreal

PURCHASING PREVIEWS

From the Washington office of

National Press Building Washington, D. C.

November 1, 1943

For Purchasing Executives:

BASIC ISSUE AFTER ALMOST TWO YEARS OF WAR remains the warding off of inflation--narrowing the gap between mounting wage payments and profits,

and the diminishing supply of consumer goods and services.

There is speculation that the quantity of consumer goods and services can be increased. These hopes are optimistic, and are not founded on fact. Further releases of materials for civilian needs will not represent an increase in the standard of living. To the contrary, the civilian economy will be shabbier six months from now than it is at the present time. Shortage of manpower will not permit the manufacture of comfort items, even if materials do become easier.

Manpower shortage will make it obvious that the quantity of goods and services cannot be expanded to sop up excess spending power. The absorption process will have to be through artificial means. Most effective, from a purely mathematical approach, is the tax route. operate to short circuit the flow of money before it even reaches the spending stream.

On the other hand, wage earners fight to retain the fruits of their labor; industry seeks to keep a share of its profit, and farm interests

oppose any levy that would drain off their returns.

The lines have been drawn, and the tax battle is now on. The Treasury has proposed drastic tax measures, seeking to acquire through direct means such excess money as has been created through war spending,

and channel this money to finance the war.

There is no question that the Treasury proposals were grim. They were intended to be. Possibly they would be treated more kindly by Congress if the threat of inflation were more immediate. Actually, there has developed a certain smugness on the subject of inflation. hasn't happened yet, even though many have raised a voice of warning.

The Congressional attitude toward inflation is marked by a certain tolerance for those who warn of its effects. This attitude will defeat the Treasury's tax program -- and while it is likely that a higher tax will be placed on so-called luxury goods, the other levies suggested by the Treasury will not be met in full. They may even be ignored.

This failure to approve the Government tax program will not of itself hasten inflation -- it will merely force a greater reliance on the other measures which can be exercised to keep price levels down. OPA will have a more severe burden. There will be greater pressure to obtain investment in Government bonds.

Real test will come at the war's end. A quick conversion to manu-

facture of consumer goods and a continued high level of industrial productivity will dissipate dangers.

WPB IS MAKING A VALIANT EFFORT TO CUT THE GORDIAN KNOT OF RED TAPE.

Best description of this effort is given in a memorandum sent to all WPB Bureau Directors and all Division Directors by WPB Operations Vice

Chairman H. G. Batcheller and Program Vice Chairman J. A. Krug.

In view of the direct effect of this program on purchasing agents, this memorandum is quoted in full:

Establishment of Policy and Program Governing the Reduction Of Special Applications and Reports.

A preliminary survey by the Task Committee on Reduction of Special Applications has been completed with the result that some 20,000 applications per month will shortly be eliminated. This has been accomplished in cooperation with the Industry Divisions and represents a

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forward step in limiting to an absolute minimum the number of special

applications required from Industry.

While this improvement is substantial in itself, it is not significant in comparison with the continually increasing amount of required reports which has become a serious problem for Industry, particularly in view of the present manpower situation. Furthermore, this condition becomes extremely difficult to justify in the light of general over-all improvement in supply and demand relationship which now exists in certain materials and products.

It therefore becomes imperative that you immediately pursue this matter further and take such action as is consistent with conditions as they now exist. A reduction of a minimum of 40 percent of the applications required of Industry has been established as the over-all ob-

jective of the War Production Board.

The several methods to be used in attaining this objective are outlined below for the policy guidance of the Divisions:

 Elimination of allocation or special authorization procedures wherever supply warrants.

 Substitution of limitation orders or restrictive provisions in orders for those which now require special applications.

3. Small Order exemptions should be incorporated in the existing orders so that not less than 10 percent of supply will be distributed in this manner unless conclusive evidence is given justifying a lower percentage.

. Replacement of consumer applications by suppliers' order board

reports.

5. Substitution of quarterly applications for montly applications.6. Substitution of quotas for special applications (including MRO)

now required wherever consumption and use have been established. When it can be clearly demonstrated that an application must be continued in use, the Divisions will be expected to recommend the processing of all possible applications in the Field Offices, in accordance with the decentralization policy as covered in General Opera-

In any event, the remaining application forms for materials and products will be standardized wherever possible and particularly as to end use information required. The detail must be based on facts readily available to the manufacturer rather than compel him to obtain other information from his customers or lead him to reply on the basis of out-of-date, inadequate, or fictitious information at hand. Certainly, CMP allotment numbers should be accepted as sufficient identification and justification for delivery of allocated materials when demand and supply are in approximate balance or direct consumption by CMP consumers (including Small Orders) accounts for less than 10 percent of total

The primary responsibility for carrying out this program rests with the Division Directors who will proceed immediately to prepare their recommendations in accordance with the above instructions. In order to assure that the above objectives are met, the present Task Committee will be continued with the Deputy Vice Chairman for Operations as Chairman. The Committee has been directed to meet with each Division Director to review such recommendations and will act with the full

authority of our offices.

Although the initial emphasis in this review is placed on special applications, the ultimate objective of reducing all types of paper work shall be kept in mind by both the Division Directors and the Task Committee.

LARGE SCALE ADOPTION OF INDUSTRIAL WAGE INCENTIVES is floundering, due to reluctance of labor unions in basic war industries to support the plan. War Production Board officials had sought to inaugurate industry-wide incentive pay plans to offset declines in production. These plans met both management and labor opposition. Governmental policy will be to continue support of the general principle of incentives on an individual plant basis.

The basis of any incentive plan is whole-hearted acceptance of those directly affected. The War Labor Board will not order an incentive system in a dispute case. It will act only upon voluntary submissions made by an employer and joined in by a union where it represents the

employees.

Active dre

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"Bound to Get There" ANYWHERE IN THE WORLD!

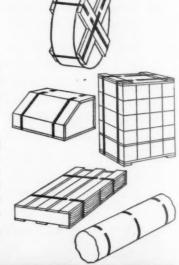


... WITH acme Steelstrap

Across the broad reaches of the Pacific—past the submarine "wolf packs" of the Atlantic . . . packages of supplies dropped from moving freighters, floated ashore to waiting troops or descending from the skies with the paratroops—packages of vital war supplies—must take a terrific beating and arrive intact.

Make no mistake—poor packs help the Axis — properly protected with Acme Steelstrap—supplies are "Bound To Get There" — and get there safer. So Acme Steelstrap girdles the globe—protecting the original investment in time and effort. It represents the lowest cost answer to safe delivery at point of destination.

During this period we're all learning valuable lessons in packing and shipping problems for post-war use. We offer a complete service—study your problems and make recommendations that represent an investment in safe delivery, save expense, speed handling, conserve valuable container material.





ACME STEEL COMPANY

2842 ARCHER AVENUE, CHICAGO, ILLINOIS

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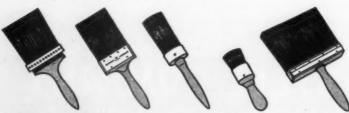
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NEOCETA SYNTHETIC BRISTLE BRUSHES



● After years in the laboratory with numberless tests of actual brushes made of this new material, NEOCETA brushes in the hands of experienced painters everywhere in the U.S.A. have now proved their practical worth. "They're right in the class with the best pre-war brushes," painters say. Skilled painters with great wartime production schedules have found in Neoceta brushes an answer to their needs far beyond their expectation. This is the first full line of painters' tools made of synthetic bristle—an important milestone in the development of brushes.

NEOCETA brushes of various types are now available for specific "end-uses." See the nearest "Pittsburgh" branch for complete information regarding NEOCETA.



PITTS BURGH PLATE GLASS COMPANY

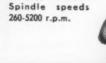
NEOCETA brushes are manufactured by the creators of famous Gold Stripe brushes



Novel



Power or hand feed. Drills to center of 20" circle. Feed 6". Capacity 1" in cast iron, 34" in steel.



BAND SAW

14 in. and 16 in. models.

Back gearing and cone
Back gearing and cone
pulleys provide speed
pulleys from 61 to 5300
range for cutting practis.f.m. any material from
steel to wood.



walker-Turner COMPANY, Inc. PLAINFIELD, N.J. W.S.A.

MACHINE TOOLS

DRILL PRESSES - HAND AND POWER FEED . RADIAL DRILLS
METAL-CUTTING BAND SAWS . POLISHING LATHES . FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL . MOTORS . BELT & DISC SURFACERS

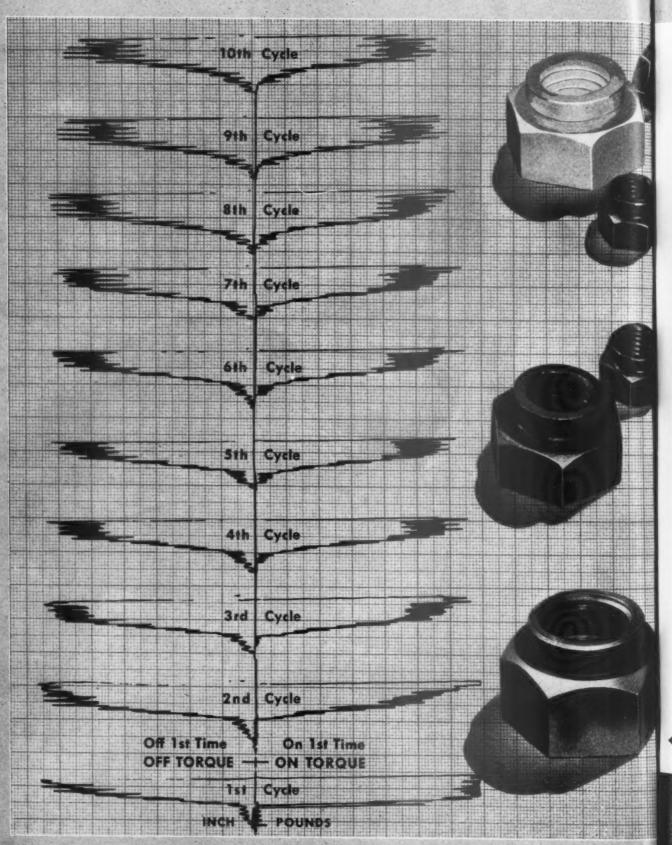


G reat Lakes Quality Steel is in practically every type of War Equipment



amson Lock Nutsa

-AND WHEN APPLIED OR



70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 Torque Graph for 5/8-18 Lamson Lock Nut

thre tough, hold tight BOLT-THEY STAY IN POSITION

• We do not know the exact service that all the Lamson Lock Nuts are going into, but we do know that whatever the application, they will withstand the toughest stresses required of them,

Will they stand repeated shock? Vibration? Heat? Cold? Can they be removed and replaced without losing their locking power? The answers are "yes" to all these queries.

At left we show a graph of the holding power of Lamson Lock Nuts. Study it a moment and consider if you have an application where a Lamson Lock Nut might better serve your purpose. Because of the exacting requirements that must be met, innumerable tests such as this one have been recorded and are in our files. Our representative will gladly show them to you if you ask him.

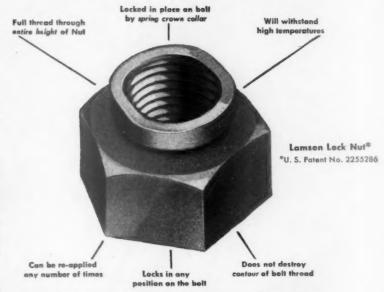
Lamson Lock Nuts, made in standard sizes from 10/32 up to 2-inch diameter, in American Standard Coarse and Fine thread series have 6 outstanding features as shown;

When the Lamson Lock Nut is applied, it will spin onto the thread of the bolt, like any other nut-until the end of the bolt meets the spring lock section. Then a wrench must be used. The Lamson Lock Nut will stay right where you set it until removed, with a wrench. It locks itself in place because after tapping the nut, the collar is then slightly deformed. The Lamson Lock Nut is heat treated to impart spring action to the collar. Spring action of the collar of the nut clamps the nut on the bolt like a vise.

Repeated removal and replacement of the Lamson Lock Nut does not impair its holding power. The graph demonstrates a standard test that proves this statement-field service confirms it. It can be used over and over again without damage to threads of bolt or nut. It has been used successfully at temperatures up to 800° Fahr. Unless otherwise specified, Lamson Lock Nuts are supplied treated with a non-seizing. rust-resisting black finish.

Call on us for engineering advice if you think the Lamson Lock Nut may solve a problem for you in your war production assemblies.

Each cycle in graph at left, represents a minimum of 14 turns.





These four books will help you in specifying and buying "standard" bolts, nuts and "specials"

THE LAMSON BLUE BOOK - is our complete Catalog of standard prod-

"BOLTS, NUTS & SCREWS"—18 our complete Catalog of standard products excepting our Aircraft products.
"BOLTS, NUTS & SCREWS"—70 pages of technical and practical information. First copy gratis, requested on your letterhead. Additional copies one dollar each.

"BOLT, NUT & RIVET STANDARDS"—175-page book published by the American Bolt, Nut & Rivet Manufacturers Association, 1550 Hanna Bldg., Cleveland, Ohio. Price one dollar per copy. (Order from pub-

Issners please.)
"SIMPLIFIED STOCK LIST" — Of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks.

THE LAMSON & SESSIONS COMPANY, 1971 W. 85th St., Cleveland, O.

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line

Cut-off Wheels IN AIRPLANE PRODUCTION

In each great bomber pioneering the skies to Victory, hundreds of feet of tubing are used.

Cutting off tubing is an important and sizeable operation in every aircraft plant. Norton Cut-off Wheels are available in a variety of abrasives and bonding processes. Norton abrasive engineers will help you to select your wheel for "wet" or "dry" cutting for the kind of tubing to be cut and for the type of machine on which it is to be used.

Write for booklet No. 517P giving wheel specifications for different kinds of tubing.

TOLON

NORTON ABRASIVES



Once he was the center of the All-American line—now the colorful jersey, the cheering grandstands are far behind.

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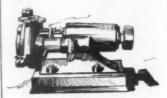
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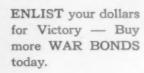


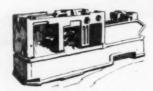
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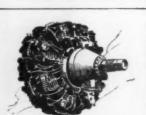
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PURCHASING

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NOVEMBER, 1943 . . . CONTENTS



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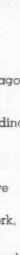
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SURPLUS STOCKS CAN BE PUT TO WORK

E VERY war contract cancellation and cutback—and they are coming in at the rate of about 600 per month—creates a surplus of raw materials and fabricated products, small tools and equipment. It is highly important that all usable surplus be put back immediately into the channels of production, where urgent demand still exceeds supply. It is also important from the standpoint of holding down the post-war problems of liquidation and absorption.

The War Production Board has made a start in calling for the return of unused allotments of CMP materials, in the publication of excess material lists, and the "brokerage without fee" service for redistribution of machinery and equipment. The magnitude of the problem is indicated in recent reports—millions of pounds of tool and alloy steels available, 55,000 items of machinery and equipment valued at more than a billion dollars. But even these tremendous totals are more than matched by the surplus stocks of bearings, valves, indicators and controls, lock nuts and washers, gears and sprockets, and scores of similar fabricated parts and products stranded in hundreds of factories following a cancellation.

It is the purpose and the boast of WPB that there will be no brokerage rackets. Unfortunately, however, the rackets are already in operation. "Clearing house specialists" are casually appearing on the scene, and are making deliveries at 62½% above list price—after WPB has provided only a routine reference to the manufacturers, and the latter, being booked to capacity and not particularly interested in product redistribution after the initial sale which is their responsibility, have nothing to offer. The goods arrive from another contractor, in the original packages; the "specialist" handles nothing but the money. Assuming that the purchase is made at 30% off, that's a cool profit of 133%.

Brokerage that delivers is deserving of a fee, but no such fee as that—for which, by the way, the government eventually foots the bill. Perhaps the most significant thing about the whole transaction is its demonstration that redistribution can be accomplished. It can be accomplished through legitimate channels, since cancellations, new contracts, bills of material and quantities are known factors. The "specialist" merely puts them together.

As a starting point, we propose that it be made a part of all termination procedure to list all surplus material and usable parts with the regional office of WPB, immediately; and that these lists be open to Purchasing Agents and distributors with appropriate schedules for their transfer, and the allowance of brokerage fees that are legitimately earned. There is no quicker or more effective way of breaking a racket than by providing a better service.

leys, Vire, efety Stuart F. Neurity

RYERSON STEEL RACES ACROSS COUNTRY



10 Tons of Sheets Delivered 700 Miles in 30 Hours 20 Minutes

It is 4:10 P.M.—a truck with ten tons of sheet steel pulls away from the Ryerson Chicago plant. In a Western war factory 700 miles away, important production for Army invasion equipment is waiting.

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Two significant facts: The sheets so urgently needed were in Ryerson stock for immediate shipment. And Ryerson facilities and service measured up to the emergency.

Unusual? No! This order is only one of many Ryerson emergency shipments that are preventing production shut-downs in these critical times. Every day, Ryerson skill and experience are expediting deliveries of vital steel.

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RYERSON STEEL-SERVICE



A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers.

Cancellations and cutbacks on war orders have already exceeded the grand total at the end of World War I, and they are mounting at the rate of more than 600 a month. The article on page 78 presents four ways in which the purchasing department can help to meet the problems of **Contract Termination**, management's No. 1 headache today.

With packaging materials growing scarcer every day, a new industrial bottleneck is threatened in the distribution of products. In **Re-Study Your Shipments**, on page 99, E. L. Cady offers some practical suggestions on better protection for your goods in transit and the conservation of critical packaging supplies, as worked out in container laboratories.

Teamwork between production and purchasing departments is essential to the smooth and uninterrupted flow of the manufacturing program. **Project Purchasing** is the plan devised by one successful producer to coordinate materials and production schedules. How this plan works and what it accomplishes are described for you on page 86.

Does **Contract Law** confuse you? In another of his practical and informative articles based on recent higher court decisions, on page 95, Leo T. Parker reviews the fundamental principles applying to purchase documents and transactions, helping to keep the Purchasing Agent out of trouble in the courts and pointing out some important factors concerning his personal liability.

A highly significant experiment in materials control has been launched in the District of Columbia, where the Purchasing Agent has been appointed Conservator of public supplies. Pattern for Conservation, on page 88, gives complete details of organization and methods which may soon be widely adopted in municipal purchasing practice throughout the country—a topic of dual interest to you as a purchasing man and as a citizen and taxpayer.

War Department officials took industry into their confidence at an important Washington conference on War Contract Policies last month. Purchasing attended that conference for you. Turn to page 81 for a condensed report of the meeting, covering the official rulings on contract pricing, renegotiation, and terminations

The tenth article in the popular and practical series on "Basic Principles of Purchasing" deals with the **Ethics of Buying.** Controversial issues such as the buyer's responsibility for sellers' profits and for errors in quotations, confidential information, and the extent to which a vendor may be entitled to the order, as well as the simpler problems of entertainment, calling hours, and commercial bribery, are frankly and fully presented. Turn to page 103 for this summary of the standards of conduct in purchasing.

Recent metallurgical developments and controls have made it possible to **Buy Steel on a Performance Basis** instead of on analysis. The new tests, and how they can be used to help purchasing and production departments by accurately predicting response to heat treating processes, are described on page 117.

Racketeering in Surplus Materials has already appeared, complicating the buyer's job and adding to the cost of the war. The editorial on page 75 makes a proposal for putting surplus stocks back into useful work through legitimate channels.

An interesting and practical **Purchasing System** using one duplicating stencil for purchase order, receiving reports, and inspection records is presented on page 112. It saves clerical work, with one writing instead of five or more; eliminates the possibility of errors in copying; and provides any desired number of copies to carry out a completely correlated system of procedure and forms based on the single control copy.

If you are puzzled by the **Paper Shortage** which is currently affecting both office and plant operations, the analysis on page 189 will show you where the paper is going and what the outlook is in respect to this important commodity.

Don't fail to keep abreast of what's new in these rapidly changing times. The **New Products** section on page 122 lists dozens of recently developed products and equipment items that your company may be able to use to advantage. The articles are short, informative, easy to read, and illustrated with photographs. Check pages 10, 12, 14, and 16, where the latest "**Know How**" and catalog information is digested for your convenience. Use this service. This helpful material is yours for the asking.

PURCHASING DEPARTMENT

RESPONSIBILITY under

A SPOKESMAN for the War Production Board, fountainhead of the vast production program which has brought the great majority of our industrial facilities into war work, remarked within the past couple of weeks that the problem of contract termination is a simple one so long as the war goes on-since cancelled contracts are usually replaced by new contracts. It is not until the end of the war, when an estimated \$75,000,000,000 worth of contracts are due to be swiftly terminated and industrial effort is once more to be directed into the channel of normal production of civilian goods, that the real impact will be felt. And even then, the problem, as he sees it, will be largely a matter of getting "quick cash" into the hands of industry to restore depleted working capital, finance reconversion, and maintain employment.

To the industrial executive now engaged on the production front, that viewpoint is open to very serious question. At worst, it might be regarded as an expression of the attitude that no sum of less than eleven figures matters. At best, it echoes the false economic philosophy that everything will be all right so long as the stream of governmental expenditures is unchecked.

An Immediate Problem

The problem of contract termination is with us now. It is with us at the rate of some 600 prime contracts per month, and conservatively ten times that number of subcontracts and sub-subcontracts. Already, in monetary value, cancellations have substantially exceeded the total of all contracts cancelled at the end of World War I. And the rate is accelerating. The new contracts do not mitigate the situation except in the broadest sort of statistical cal-

While controversy rages as to the official responsibility for termination policies and settlements, the Purchasing Agent has a job to do in protecting his company's position

By STUART F. HEINRITZ

*

culation. In the first place, there is no assurance that the new contract is placed with the same contractor who received the cancellation, and even less assurance that the subcontracts-affecting many more industrial units-will be replaced with the new business. And in the second place, the issuance of the new contracts is prima facie evidence that these terminations are not modifying the impact of that future period of war contract termination by reducing the amounts involved, though they are doubtless helping to hasten the day of victory. If there is any moral to be drawn from this situation, it is that we had better utilize this experience immediately and intensively to get ready for the day when the problem breaks with full force upon our industrial structure.

The chief points of controversy at this stage are:

(a) Agreement on a uniform policy of termination and settlement, to be used by all contracting agencies. It is agreed that some uniform policy should be adopted instead of multiplying the confusion by varying provisions in individual contracts and differences of policy between the agencies. Such a uniform clause could be incorporated in all contracts by reference. But to date no agreement has been reached on what that clause should be, although it has been the subject of conference and compromise for the past year. The varying viewpoints were presented in these pages last month.

Now that agreement among the contracting agencies appears to be closer, the Office of the Comp-

troller General formally stands upon its prerogatives of audit and review—a position strongly reinforced by its firm hold upon the national purse strings—and claims final jurisdiction, asking Congress to reaffirm its authority in terms that would largely negate the progress made up to this point by the contracting agencies and WPB.

(b) The authority for administering contract settlements. The alternatives in this instance are: the contracting agencies themselves, acting in accordance with uniform policy; an independent administrative unit, possibly a part of the WPB organization; and, again, the Office of the Comptroller General.

Congress Must Decide

This is one case in which, quite literally, it will "take an Act of Congress" to make the decision. In preliminary form, the legislation has already been introduced, and hearings are being held, looking to the prompt action which is so essential. Definite action can be expected soon, for the legislators are more skilled in practical compromise than are the agencies and committees where the problem has been kicking around for many months past. Furthermore, they are not hampered by considerations of personal prestige and prerogative in respect to the handling of the contracts, and they have the very great advantage of authority—in contrast to the advisory status of the Coordinating

Indications are that Congress will support the plan placing termination settlements within the jurisdiction of

Editor's Note: Contract termination is one of the most vital problems facing management and purchasing executives today. For additional information, see the articles: "What to Do About Contract Termination" in the October, 1943, issue, and "The G. A. O. Will Get You If You Don't Watch Out" in the December, 1942, issue of Purchasing.

CONTRACT TERMINATION

CO	NTRACT TERMINATION SETTL	MENT POLICIES	
COMMITTEE FOR ECONOMIC DEVELOPMENT	GENERAL ACCOUNTING OFFICE	WAR DEPARTMENT	WAR PRODUCTION BOARD
Proposes 4-point program: 1. Creation of a Contract Settlement Board by Congress, with representatives from each contracting agency. Board to set up uniform, simplified policy. Settlements issued by Board not to be subject to review by Office of the Comptroller General except in case of suspected fraud. 2. Decentralized administration of contract settlement procedure. Authority in hands of contracting agencies, subject to uniform policies determined by Board. Avoids bottleneck and delays of review and settlement by central agency. Greatly strengthens position of contracting officer by permitting him to reach final negotiated settlements. 3. Prompt recourse to courts in case of dispute. Branch courts of claims to be set up in various sections of country, or other alternative measures as determined by Congress, to speed legal process. 4. Mandatory Government loans to contractors and subcontractors, up to a substantial percentage of proper settlement claims, pending final adjustment, to speed reconversion and maintain employment.	Stands by the principle of an independent (GAO) audit in the interest of conserving public funds; cites "liberal attitude" of contracting officers in determining allowable cost items, as proof that review by GAO is needed. Charges that Army proposals usurp auditing powers vested in GAO, and that WPB proposals similarly "by-pass" GAO. Specifically claims right of post-audit on advance payments; by implication this reserves right of pre-audit before any advance payments can be made, thereby slowing the operation of a policy that is proposed solely for the purpose of accelerating payments. Objects to all-inclusive or mandatory policy of advance payments; proposes limiting this type of assistance to applicants showing "actual necessity therefor". GAO has within the past year geared itself to decentralized operation and has reduced the time required for routine audits from months to days, but would be swamped by the volume of work incident to widespread termination of contracts.	Responsible for approximately 75% of war contract terminations to date, and most vocal of the contracting agencies in asserting its own right to make termination settlements. Function and interests of the War Department are primarily in the direction of stimulating production for the duration of the war. Industrial morale and confidence regarding termination policies have a direct bearing on this objective. Cost and economic considerations are secondary. Bases its claims for jurisdiction on the War Powers Act, and vigorously contests position of both GAO and WPB. Contends that authority for termination settlement is essential to successful procurement program. Finds that termination settlement is essential to successful procurement program. Finds that termination settlement is essential to successful procurement program. War Department claims are substantially supported by the broader economic viewpoint and recommendations of Committee for Economic Development.	Senate Bill S-1268 proposes that WPB should hav authority to issue regulation governing contract termination policies and payments But WPB is generally discredited in this respect be cause: a. It has been working of uniform termination policies are without effecting tangible agreement, though aving the benefit of a coordinating committee for the purpose. Meanwhile, the problem has grown to critical stage and proportions. b. WPB is not, in itself, contracting agency, and having predecessor of ganizations accepted on advisory responsibility of purchasing policies. c. Its personnel has no special qualifications of familiarity with the contracts or with procurement in general, and its organization is not we adapted to undertake and broad administration policies. d. Presumably, WPB we itself be terminated with the end of the war, whereas the contracting agencies, and GAO, are a permanent payof the government structure. Responsibility for termination would merely perpetuator prolong the life of WF beyond its basic function.

contracting agencies and officers rather than in the General Accounting Office. The Act is up before the Military Affairs Committee, and while it is a fiscal problem of very great magnitude, it is even more a problem of maintaining war production at high volume and efficiency up to the very moment of termination, and an economic problem of hastening reconversion and maintaining employment in the immediate postwar period. The General Accounting Office has traditionally disregarded or subordinated every other consid-

eration to observance of the letter of the contract obligation—a proper enough policy, from their viewpoint since this is the purpose for which the Office exists.

Manpower for Accounting

Congress is normally inclined to support the GAO, which is by statute responsible to Congress alone, and entirely independent of the executive and judicial branches. This final word regarding disbursements of public funds, coupled with the Congressional power of appro-

priation, constitutes one of the most potent attributes of the legislative branch. However, despite the very notable improvement and acceleration in GAO procedure over the past twelve months, the Office is neither staffed nor organized to deal swiftly with the volume of contract terminations now occurring—much less, to handle the greater problem ahead.

At the annual meeting of the Controllers Institute in September, some impressive figures were reported on the accounting manpower required in effecting a termination settlement.

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In one case, the submission of a company's claims on a single prime contract for plant construction, together with the claims of subcontractors, had absorbed 60,000 man hours of work. (This does not include the additional thousands of man hours expended by representatives of the Government.) An average of the experience of several companies on similar large contracts indicated that preparation of the necessary data for submission on a termination settlement usually entailed about three months of work by the entire accounting staff and other executives, and that another three to four months generally elapsed before a mutually satisfactory basis of settlement is agreed on. With accounting staffs being depleted by selective service, a serious manpower shortage looms in this field just as the load is increasing toward the peak. If GAO were to expand its staff now, it would presumably be from this same group of qualified accountants and auditors, resulting in an even more critical situation and longer delays than at present.

At the same time, the Price Adjustment Boards of the War, Navy and Treasury Departments, and of the Maritime Commission, are making a commendable record for speedy negotiation and settlements, as well as achieving greater uniformity and simplification of methods. In a recent two-week period, the War Department Board alone reported that 517 agreements had been reached.

Preview of Termination

Some indication of what the Army policies may be, can be gathered from a statement before the Chicago Association of Commerce by Henry P. Isham, Chief of Purchasing, Termination, and Renegotiation Policy for the Chicago Ordnance District. This district is the country's largest, and may set the pattern for the entire Ordnance Department and Army Service Forces. In answering questions from his audience, Mr. Isham outlined a number of policies, four of which have a direct bearing on purchasing department responsibilities:

- 1. The Ordnance Department will not police or hold contractors responsible for meeting the inventory requirements stipulated under CMP.
- 2. Recognition of reconversion expense as a factor in making negotiated termination settlements is doubtful.
- 3. Suppliers to prime contractors do not lose their right to enforce

collection of their account upon agreed terms, even though the prime contractor has not yet arrived at a settlement with the Government.

4. The Government does not propose to purchase supplies turned back to suppliers by prime contractors in order to prevent market demoralization.

These statements, though perhaps only semi-official in respect to the program as a whole, point rather clearly to the fact that regardless of what the final termination policy will be on such issues as advance payments, profits on uncompleted portions of the contract, and the likeissues that are absorbing the attention of management—a substantial portion of the groundwork for a favorable settlement, and for a favorable business position after settlement, is even now in the hands of the Purchasing Agents for contractors and subcontractors. The implications of these statements are worth careful analysis.

Army and WPB

When the Army declines to accept the role of a compliance officer for CMP, it does not follow that the contracting officers will wink at or accept responsibility for inventory violations. It means rather, that the Purchasing Agent and his management have to make their peace with two governmental agencies instead of one. A rough parallel may be drawn between this situation and the civil and criminal damages that might be involved in an automobile collision, for example. The two owner drivers are generally quite content to settle between themselves for the cost of repairs, and are not inclined to press charges of reckless driving or going through the red light. But when the motorcycle cop arrives on the scene, with the interests of public safety in mind, it's a different story.

CMP provides the green light, implementing the production program with its allotments of required materials, thereby working directly with the Army and other claimant agencies. But CMP also flashes the red light in the limiting regulations necessary for equitable distribution of available materials. And it is generally the Purchasing Agent's signature that goes on the inventory reports and listing of quarterly requirements, as well as in passing along the authorizations on his purchase orders. There is a definite responsibility here regardless of whether the contracting agency, in another department of Government,

elects to undertake the policing job.

Furthermore, in the final accounting on a termination settlement, since CMP allotments and inventories are directly tied in with contract quantity requirements, it is difficult to imagine even the most complaisant contracting officer certifying to more than the actual permissible quantity as a proper expenditure incurred against a particular contract in the event of cancellation. It may be gratuitous advice to suggest compliance with a governmental regulation as a desirable policy, but we have the precedent of OPA in setting up price and rationing schedules, and then asking for a consumers'

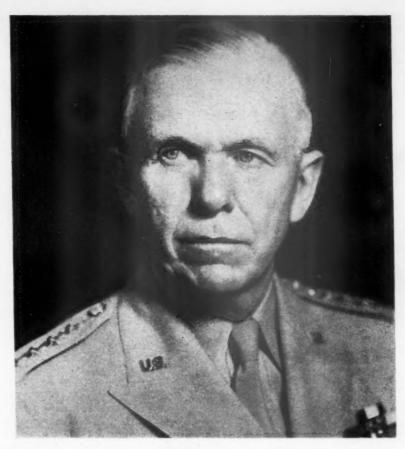
(purchasers') pledge of compliance.
Meanwhile, one of the best ways of preparing for and assisting in a quick and favorable termination settlement is to have all purchase and materials records, including CMP records, clearly kept and properly segregated by contracts, in the purchasing department.

Prepare for Reconversion

In figuring the cost of manufacture in filling an order or a factory run, set-up charges are a necessary and legitimate factor. But the set-up charge on the next run belongs to that second order; you don't include the charge at both ends of an opera tion. And the materials cost is calculated from the bill of materials Extra inventory of materials and tools goes into a separate account, until it is issued for use. That, apparently, is the principle on which termination settlements are to be based. The alternative principle, that premises or facilities temporarily leased for a special purpose are to be returned in the original condition. applies only in the event that such an arrangement was contemplated in the contract, and the great majority of war business-particularly in the subcontracting stage — has been placed on a forthright order and acceptance basis. Payment is contemplated for products made and services rendered, with a reasonable profit included in the price. This is far different than a lease arrange-

Many war contractors are in the fortunate position of using materials and equipment, and performing operations, that are substantially the same as in their normal peacetime schedules, though the product may be a specialized Army or Navy item. Others have strayed rather far afield from their normal requirements and manufacturing activities. For the latter group in particular,

Continued on page 286



Army Chief of Staff General George C. Marshall informed industrial leaders of our military problems.

WAR DEPARTMENT CONFERENCE ON CONTRACT PROBLEMS

Military and industrial leaders confer on contract pricing, renegotiation, and termination procedures

(Industrial leaders, labor leaders and newspaper publishers were called to Washington last month for a conference with War Department and war agency officials on the progress of the war. The following is a review of the highlights of the conference as they affect procurement, with excerpts from the major policy addresses.)

A GAINST a backdrop of political controversy concerning the basic issues of price policy and contract terminations, War Department officials explained their current policies and plans of action to more than 200 industry and labor leaders.

By A. N. Wecksler,

Washington Editor

At stake is the immediate problem of facilitating conversion of plants when changes in military requirements result in contract terminations. Beyond the immediate considerations are those of implementing quick large scale conversion at the war's end.

The War Department conference was called for the purpose of informing industry on both military and economic developments. The latter are assuming increasing importance as the war reaches offensive stages. The war is not in any final

phases, but its outcome is no longer in doubt.

Under Secretary of War Robert P. Patterson, who presided at the opening session, stressed the fact that the big production job for hastening the day of victory and conserving the lives of our fighting men still lies ahead, and calls for the utmost cooperation and understanding between the military and industrial organizations. In setting the keynote of the conference, he stated:

"War in a democracy is, and must be, a partnership. It has been repeatedly proven in combat —and indeed in our own successful campaigns in North Africa and

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Lunch between sessions. (left to right) P. W. Pillsbury, Pres., Pillsbury Flour Mills: Major General Clifford L. Corbin: R. R. Deupree, Pres., Proctor & Gamble; L. N. Selig, Pres., General American Transportation Co. (a former Purchasing Agent); Major General E. B. Gregory: B. B. Gossett, Gossett Mills and Harry L. Bailey, Pres., Wellington Sears Co.



Brig. General Albert J. Browning, Director of the A. S. F. Purchases Division, outlined termination policies. (The eagle has been replaced by a star.)

Sicily—that the soldier who knows not only what he has to do but also why he has to do it, is the best soldier and the most dogged and determined fighter. He is a partner in the battle of strategy. Civilians, too, are partners in the war, and none more so than the men who make the weapons with which our soldiers fight."

Importance of the War Department's position in the whole picture of contract termination and price adjustment is highlighted by the fact that the Army favors quick liquidation of contracts—on the assumption that the war should be a passing phase of the industrial economy, once actual hostilities are at an end.

Concern for Future

The War Department officials indicate a major concern over the nation's post-war economy. This attitude is largely traceable to the fact that the contracting and pricing functions of the Army are directed by men from industry whose personal endeavor is to return to their industrial careers rather than to build themselves into permanent military figures.

Roughly, it is their contention that the nation can disentangle itself from the war economy on the same rule-of-thumb method by which the military economy was achieved. It is recognized—and it has been so stated by War Production Board Chairman Donald Nel-



son—that many errors were made in the interest of building a war machine quickly. Policy was to correct errors as they were discovered. Similar procedure has been favored in terminations.

However, while the need for expediency in the interest of prosecuting the war has been conceded by certain old-line Government agencies—such as the General Accounting Office—there is a strong disinclination on the part of these agencies to follow such a procedure in converting to peacetime production when the war is over.

All parties—WPB, the military agencies and the old-line Government agencies—agree to the need for quick conversion to peacetime production in the interest of stimulating a high level of industrial production, and in this manner insuring employment.

Quick liquidation may, however, it is contended by General Accounting Office officials, lead to leakage of public money and overpayments, with subsequent scandal.

This objection is recognized by proponents of quick settlement, but they are willing to chance it. Public criticism is also feared by industries which were abused on a similar score following World War I. There is no doubt that some of the criticism—as in the case of post-World War I experience—could be justified.

Pricing Policies

The three major addressés delivered during the War Department Conference on the subjects of procurement, pricing and terminations evidenced a clear understanding of industry problems. William L. Marbury, General Counsel, Purchases Division, Army Service Forces, pointed up the Army's contract pricing policy as follows:

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"It has been our view that the greatest contribution which we could make to the increase of production would be to employ those methods of contracting which would bring the strongest pressure to bear on manufacturing costs. Accordingly, the War Department adopted the policy of placing contracts at fixed prices whenever possible and developed administrative procedures designed to assist contracting officers in negotiating contracts at prices which would eliminate unreasonable allowances for contingencies. As you all know, that policy has been strongly endorsed in the recently published Baruch Report, which criticizes the cost-plus-a-fixed-fee type of contract, and I think that you may look forward to greater pressure from the War Department in the direction of close fixed pricing.

"It is true, of course, that the costplus-a-fixed-fee type of contract has its necessary place and it is also true that some contractors who are operating under that form of contract are making efficient use of both manpower and materials. Neverthless both in theory and in practice there can be no doubt that there is no direct financial incentive to reduce costs or to eliminate wasteful practices. At any rate that is what the War Department believes and its policies are based on that belief. We must all look forward to an increasingly sparing use of this type of con-



tract. On the other hand, the lumpsum contract fixed at a price so high as to protect against all risk has little if any greater merit than the cost-plus-a-fixed-fee contract. If our primary objective is to be obtained, therefore, we must by careful negotiation fix prices fairly close to efficient costs.

"This policy presents the contractor with serious problems, because War Department contracts call for long-term commitments. Some of them call for performance over periods extending many months into the future. It is hardly reasonable to expect contractors to assume the risks of possible increases in costs beyond their control which may arise during that period. Plainly some method must be devised to meet this situation. To meet this problem we have provided for adjustments in prices in the event of interference with production schedules through allocations of materials, in the event of reductions in delivery schedules and in the event of partial or total termination. Under the stimulus of comment and criticism from our field agencies and contractors we are constantly improving these provisions.

"The War Department has also authorized a method of short-term prices designed to give adequate protection against uncertainties as to uncontrollable costs. This method of contracting permits an adjustment of the unit price at the call of either party at periods of from four to six months on the basis of conditions then prevailing. Thus it makes the long-term contract equivalent to a series of



Joseph M. Dodge, chairman, War Department Price Adjustment Board, explained renegotiation policies.

Demonstration of an assault on an "enemy" held beach gave conference members a view of how the equipment they manufactured was being used in battle.

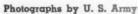
short-term contracts and eliminates the necessity of forecasting the future far ahead. Under it the contractor may safely agree to a close price based on current conditions. On the other hand he may make commitments for materials, supplies and component parts as far ahead as may be necessary with the assurance of a fixed price which cannot be changed without his consent.

"As a further stimulus to reductions in costs, the contract provisions call for recognition of the efficiency of the contractor in the negotiation of the price for succeeding periods. Furthermore, in cases where prices are shown to be close and segregation is feasible, these contract provisions likewise authorize exemption from renegotiation. Where this exemption provision is used, the contractor has an added incentive. Accounting difficulties have limited the use of these provisions, but the War Department has been wrestling with this problem and believes that the use of this power to exempt from renegotiation can and should be extended."

Renegotiation

On the subject of price adjustment, Joseph M. Dodge, chairman of the War Department Price Adjustment Board, said the following:

justment Board, said the following:
"No one will deny that business has many problems and that among them is renegotiation. However, in many instances, the problems charged against renegotiations are inherent or fundamental to the situation of a particular business. They exist entirely apart from and prior to renegotiation. They are usually directly related to problems of the financial management of busi-







"Contract Pricing" was covered by William L. Marbury, General Counsel, Purchases Division, Army Service Forces.

ness expansion. There is frequently an insistence on high prices which include high profits on government war purchases for the purpose of meeting some already established financial, plant or equipment illness and the cost of business expansion.

"Obviously, the result of renegotiation has been to remove what appeared to be excessive profits included in prices. Further, most renegotiations are settled in a large part by taxes that would have been paid on the original prices and the profit therefrom. Therefore, renegotiation can only add to any problem the difference between the taxes on the original price and profit basis, and the taxes on a readjusted lower price and profit basis.

"Too little emphasis has been given the real cooperation of the large number of contractors with whom the various services have easily reached an agreement on an adjusted price and a limited profit.

"There is no intention in the War Department nor on the part of any of those responsible for renegotiation to expand, extend, or perpetuate it beyond the necessities of our war procurement. In the meantime, the work is made mandatory by Congress.

"It is quite possible that our war production expenditures will substantially decline before all hostilities cease. Ultimately, terminations will tend to replace procurement—and real competitive pricing conditions on government business will become effective as the requirements for war products decline in importance. When that time comes, but not before, we should eliminate renegotiation."

Contract termination was covered by Brig. Gen. A. J. Browning, Director of the Purchases Division, Army Service Forces. Speaking on arranging prompt and fair settlements, General Browning stated:

"We recognize that the contractor is as much interested in a prompt settlement as a fair one. He needs working capital to get his plant in peacetime operation and to give jobs to his employees. In meeting this objective there are several major obstacles to overcome. The first is getting the settlement proposal from the prime contractor. The second is the disposition of materials. The third problem is in clearing subcontractors' settlement proposals and that will undoubtedly remain one of the biggest jobs under termination.

"If we are to surmount these problems and obtain prompt settlements, two things will be required. First, simple and workable procedures and second, a trained organisation."

"We are now seeking to forge a sound procedure in the fire of actual practice. In Procurement Regulation 15 we have issued a handbook on cancellation management, which should be treated as a tentative guide. I say 'tentative' advisedly because we will continue to revise and rework it in the light of our experience until we are sure that it is a thoroughly practical, workable operating handbook. As a guide to termination accounting, a manual has been published by the Fiscal Division for use where auditing is necessary.

"One basic principle is the keystone of this procedure. The job can be done only by negotiation on a business-like basis between representatives of the Government and individual contractors. We are convinced that the crucial need for speed in settlements will not permit excessive use of auditing and accounting. Reasonable data are of course needed for negotiation, and for this purpose selective accounting investigations will be generally necessary, but the use of detailed audit, except in unusual cases, would seriously delay settlements and impede the return to peacetime pro-

"Undoubtedly, reliance on negotiation will result in some mistakes, and some over-payments, but these must be balanced against the costs of delay in terms of wages and other income. At some point the desire for exactness and perfection in settlements must give way to the need for speed. The difference between settlements on this basis

and the most carefully audited settlements could not possibly justify the terrible cost of an extended period of idleness for industry and labor.

"In addition to sound procedures, we need a capable organization and personnel to do the job. At present we are setting up the organizations and training our personnel for this purpose. A special Termination Branch has been created in the War Department and there will be termination branches in the contracting offices."

General Browning also stressed the need for working out the financing of terminations. On this subject, he pointed out:

Financing Contract Settlements

"Even with efficient procedure and personnel, termination and settlement of the enormous volume of contracts and subcontracts will inevitably require a considerable period. Consequently, the second great problem of termination is to see that contractors and subcontractors all the way down the line get cash at once to release their own working capital from frozen war inventory and receivables and to permit them to return to peacetime business and continue to furnish employment to their workers. Substantial amounts of such cash must begin to flow out within a week or so after termination.

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"None of the methods now being used to finance war production is completely satisfactory for termination financing....In order to achieve adequate financing of termination settlements it seems to me three things are required.

"First, interest must be allowed on the termination settlement to equalize the position of contractors who use private financing rather than public.

"Second, the type of financing must be extremely simple.

"Third, the method must permit advancing of money against inventory, receivables, work in process and payments to the tier of contractors immediately below.

"This type of financing can be done in either of two ways. One is by a very simplified form of guaranteed loan made through existing channels along the lines of the present V-loan system with a high degree of decentralization. The other is direct loans made to industry either by the procurement agency with the major interest in the borrower or by another Govern-

Continued on page 278

FROM STOCKPILE TO SURPLUS

We shall do well to face the fact that the material and facilities we prize so highly in today's war effort may become a crushing burden in tomorrow's peace

By JAMES MacPHERSON

California Arabian Standard Oil Company

IN DEALING with the post-war disposal of surplus Government property, as in dealing with procurement procedures under Government regulations¹, the same choice between rigid rules and flexibility must be made. That decision depends on the caliber and judgment of the responsible Government officials concerned.

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Heretofore, a consideration of surplus property has not occupied a prominent place in the procurement scheme, but a problem is inevitably developing that will rival in its seriousness the situation which required war purchasing to be placed on a negotiated basis.

When hostilities cease, the incredible stockpiles of war materials and facilities owned by the United States Government will suddenly

and instantly become post-war surplus. It is an unfortunate paradox of modern war that the violence and intensity of the conflict increase as the day of the armistice draws nearer. The decimation of an enemy air fleet, for example, does not call for a cessation in the manufacture of our aircraft. Common sense dictates the straining of every productive facility to produce more weapons and follow the advantage. This necessity holds true in all phases of war - raw materials, weapons, supplies. Almost all of these must be produced in an ever-increasing volume regardless of how successful the Army appears on the battleground until victory is attained.



Theoretically, then, the nation achieves its war mobilization peak at or near the day of victory. Armies are at top strength in equipment; industrial facilities are converted as closely as possible to 100% war manufacturing. Procurement and production are coordinated to place the major share of our resources at the command of the military forces.

Then, suddenly, the Armistice! The incalculable mass of war materials is suddenly so much surplus. Scattered around the world, the material represents a sizable portion of the money poured into the war. What must be done to insure the retrieving of the maximum value

for the Government and at the same time to aid a speedy return to a healthy peace time economy? What action will the Government procurement authorities take which will equally benefit industry, commerce, and the individual citizen? These are questions calling for competent analysis and regarding which decisions must soon be made.

\$50,000,000,000 Stockpile

It has been estimated by a Congressional committee reporting on this subject that the post-war surplus stockpile will have a value of approximately 50 billions of dollars, and will consist of an array of material and equipment almost beyond comprehension. The tremendous economic force of such a stockpile may be readily seen when it is realized that 50 billion dollars is almost as much as our total national income in some of the depression years.

Such a tremendous stock of material and facilities, if indiscriminately loosed upon the American domestic market, would have dire consequences. On the other hand, with a pent-up demand for peacetime goods, wise handling of these supplies and facilities can play an important part in the transition period.

In all of these considerations, one very important point must not be lost sight of: no matter how Federal purchasing, or the disposal of surplus material, is handled, it is

(Continued on page 278)



JAMES MacPHERSON

¹See "Let's Keep Negotiation," by James MacPherson, in the October, 1943, issue of Purchasing, page 116.

PROJECT PURCHASING

—a practical way of coordinating purchasing and production for efficient planning and control

THE hands of the clock move apart, come together, move apart once again, ticking away the minutes and the hours. At the one point, though, there is no divergence. There is a junction that acts as a point of emanation for the two hands. Separate the two hands from this axis and you have two lifeless bits of metal lying awry, meaningless, unrelated.

As it is with the clock, so it is with Purchasing and Production—the hands that move your industrial clock.

In our particular method of wartime operation, our every effort is based upon one concept—the final unit to its final destination. That By
J. H. SCHEINMAN
Production Planning Manager

LEON S. POLL

Project Purchasing Agent Freed Radio Corporation New York

doesn't just happen. That final unit reaches its final destination better and quicker when a complete plan based upon foresight and planning has come to fruition.

Our purchasing set-up is called Project Purchasing. Paralleling Project Engineering, this method of purchasing procures all material for one particular contract from screws to machine tools, from condensors to excelsior for packing. to tie

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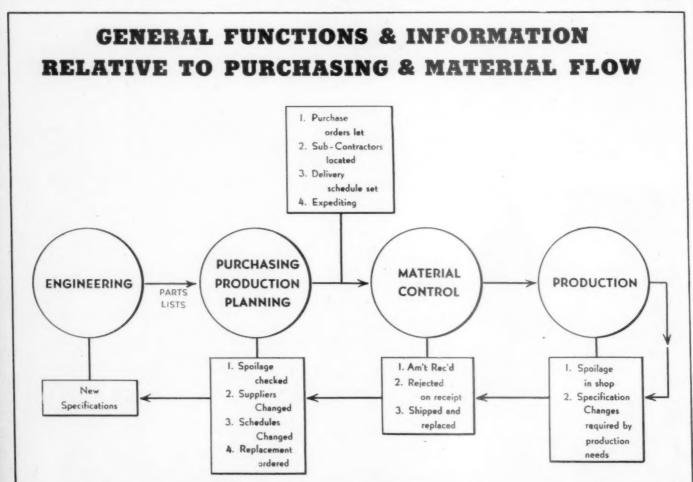
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The Project Purchasing Agent is provided with a complete bill of materials, specifications, blueprints and consequent elaborations when necessary.

Planning Manager Steps In

Were the Project Purchasing Agent to proceed on a hell-for-leather drive to procure every item on the list according to a general plan of schedule production, he would be technically fulfilling his function. Likewise, he would be over-running quite a few important factors which would, at a later stage,



cause considerable grief. In order to tie in the hands of our industrial clock to the junction point where a relation exists, our Production Planning Manager gets on the ball with the Project Purchasing Agent.

Each part on the bill of material is given a searching analysis. There are parts such as resistors, screws, nuts which arrive exactly in that state in which they reach the assembly lines. However, there are still other particular parts which must undergo adjustment after receipt from the original source. This adjustment might require the facilities of our machine shop. The Production Manager (Planning) immediately surveys the machine

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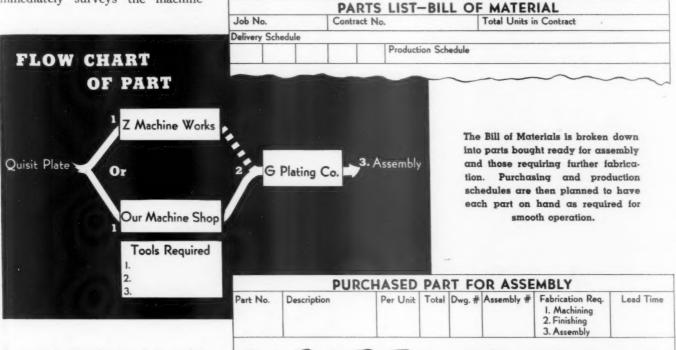
The operations sheet lists the tools necessary to the job better and quicker. These tools are procured in the precise manner as the parts

they are to fashion.

Sub-contracting of pre-assemblies or parts can, by the utilization of the specialized skills of Purchasing and Production Planning be assigned intelligently as part of a picture of Production, into which these sub-contracted parts are to be blended. Armed with the blueprints and the operations breakdown, sources are visited and the resulting discussions are made more produc-

ule by the supplier, or a "bug" found in a purchased part, or rejection by inspection of a sorely needed lot of material, affects production, and causes the burden to fall upon the Purchasing Agent.

It is our practice to have frequent meetings between both men for review and exchange of mutually required information whether or not emergencies exist. Like the hands of the clock we meet at regular intervals. There is no doubt in the minds of anyone concerned today with wartime operations, that not every contingency can be possibly realized in



Shop load placed upon it by other production projects.

Should the machine shop facilities be inadequate to handle this additional load, outside sources are solicited. Peremptory routing to ma-chine shop easily results in slowdowns, hair-tearings and frantic castings-about. Planned fore-knowledge by-passes these eventualities.

Operations Breakdown Necessary

To further the interreliance of Purchasing and Production, an important adjunct is a complete operations breakdown from which the Project Purchasing man and the Production Planner work. The picture of the pyramiding of the many small parts into the one completed unit finds a happy result in several ways. Scheduling of delivery considers the cycle of pre-assemblies and line assemblies to final assemblies. First things can thus be scheduled first.

tive because of the concrete nature of needs both as to the time element and the qualitative factor.

While these both departments are working together to whip the flow of material into an unfailing stream, each learns of potential tripping stones-failure to meet time schedule by a supplier, inability by our facilities to absorb over-large quantities of material and so on.

Problems Perpetually Arise

When all orders have been let and every part has been scheduled, the task is not quite finished. The task, obviously, cannot be considered completed until the last unit on the contract has been strapped. There are perpetually arising problems requiring alert solutions. The solution of these problems, whether they be failure to meet a schedadvance. Every problem solved in advance, though, leaves the efforts of the concerned parties that much more free to handle the four-alarm fires that do arise.

Basis of Success

Mentally too, the coordination makes both departments feel a great responsibility in the sucess of the other. Gone is the impersonality and the cold, "you do your job and I'll do mine" effect. Results have shown the method of mutual interdependence to be successful. And the only measure of success today is to get the unit we're making to the hands of that boy we know in the thickets, on the beaches, in the clouds, in the desolate tundras of the North. Our Distinguished Service Medal is the unfailing flow of material to the assembly lines.

M EXTRAORDINARY movement is now well under way in the District of Columbia—Washington and its environs—that will bear watching. Though it does not stem from WPB's critical materials conservation program, it looms as a vital and notable factor in the wartime materials supply picture. Born of the war, it now is only a ripple, but it is unquestionably destined to spread until its effects are felt in every hamlet, town, city, county and state "for the duration" and long thereafter. It has tremendous possibilities.

It is a well organized, capably directed civic conservation movement - a broad-gauged mandatory program of "use carefully" and waste not" in the Capital's municipal administration. It commenced with pencils, pins and office ma-chines within the ramparts of the Federal Government itself, spreading to various of its 82 departments, divisions and agencies. Taking root in the municipal government it has expanded far beyond pencils and paper clips and typewriters, to include the equipment, supplies and facilities of police, fire, sanitary and water departments, asylums, hospials. schools, and penal institutions and the hundreds of other services that go to make for a well ordered community life.

A Broad Gauged Program

The movement is much bigger and goes far deeper than the erstwhile popular and indispensable salvage programs promoted by material and manpower shortages. It is dedicated to getting the most out of the materials and supplies and equipment now in use, stretching inventories, and salvaging usable things, as well as the lending or transfer of equipment, tools and supplies between departments. Its purpose is the prevention of waste of anything and everything used in or by the local government, and making curtailed supplies and existing equipment last as long as possible, all looking to the best possible functioning of the civic administration under the stress of wartime conditions.

Washington's conservation program is profoundly simple. It does not entail a new bureau. It does involve some extra work. It can readily be directed by persons now in authority. And with this background it is a mandatory program commanding the support of officials, department heads, clerks, laborers, and inmates of public institutions.

District of Columbia inaugurates program to prevent waste and to get the most out of current supply of material and equipment Plan launched by Purchasing Agents

By GEORGE E. HENRY

PATTERN FOR



ROLAND M. BRENNAN

Shortages Becoming More Acute

Treasury Procurement originates conservation because of shortages in office supplies and equipment

THE profession of purchasing can be justly proud that this movement, with its latent though prodigious possibilities, found definite expression first in plans laid by purchasing men. These men are: Clifton E. Mack, Director of Procurement, U. S. Treasury Department, who is responsible for the procurement of all non-military requirements of the Federal Government, as well as for the execution of special programs, such as Lend-Lease, and, Roland M. Brennan,

Purchasing Agent for the Government of the District of Columbia. Mr. Brennan is now also known as the Conservator and as such he has the responsibility of applying conservation to every municipal department in the Nation's Capital and the various public institutions within the District of Columbia. The District is under the executive direction of a Board of Commissioners headed by President John Russell Young.

Mr. Mack is president of the

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CONSERVATION ADVISORY COMMITTEE

Left to right: John B. Gordon, A. R. Pilkerton, Col. Joseph D. Arthur, Jr., Walter L. Fowler, and Robert L. Haycock.

CONSERVATION

Purchasing Agents Association of Washington, D. C. Mr. Brennan is one of the organizers of this active association which recently gave consideration to the momentous question of disposing of wartime surpluses.

Now to begin at the beginning. The initial conservation-of-supplies program originated in Mr. Mack's bailiwick, the Procurement Division of the Treasury Department of the United States Government. It was born of the growing shortage of office equipment and supplies and the all too obvious necessity for preventing waste and mis-use of stationery stores and the abuse of the thousands on thousands of typewriters, comptometers and other business machines and accessories essential throughout the Federal Government service.

Start Own Program

For months the Bureau of the Budget, the Civil Service Commission and Treasury Procurement had been weighing the pros and cons of personnel training and conservation of clerical talent and office equipment. There was considerable discussion as to who should take the initiative and who would be responsible for carrying out such a program. In fact it seemed that each was desirous that one of the others should accept the responsibility. They did not get anywhere. In the meanwhile, under Mr. Mack's direction, Treasury Procurement undertook the development of a conservation program within itself which went further than personnel training and the use and care of office machines. It included also the comprehensive word "supplies".

After the program was definitely organized and running smoothly,

the eminently satisfactory results prompted Mr. Mack to send a letter to all Government departments, agencies and establishments (including the District of Columbia), stating among other things that "it will be necessary that every possible precaution be taken with a view to conserving and protecting the equipment and supplies now available for use", and inviting attendance by a representative at a conference "for the purpose of discussing a general program for the training and guidance of employees in the conservation and protection of office equipment and supplies."

High Spot of Meeting

The high spot of the meeting was the reading of a "General Report of Steps taken by the Procurement Division, Treasury Department, in its Conservation Program Organization", along with a letter that Director Mack had addressed to the employees in his division.

That letter in Ben Franklin style urged them, because of the serious situation in the field of office supplies, to be frugal and wise in their use of such things, and to exercise care in the use and maintenance of all office machines and equipment. It pointed out that manufacturing plants that formerly produced varied kinds of office machines are now converted to the output of equipment for soldiers, that "office supplies that were presumed to be plentiful can no longer be so regarded. . . . We must stretch out beyond our peace-time practice the use of all office supplies of the consumable variety. In addition we must re-educate ourselves in the handling of all kinds of equipment to prolong its service life.'

There are six thousand employees under Mr. Mack's jurisdiction. If



MAJOR F. X. A. EBLE

Conservator for Treasury Procurement Division

each one daily saved but one or two sheets of paper, a couple of pins and paper clips, a sheet of carbon paper, and one of this and one of that, the aggregate saving is quite imposing. Hypothesize the potential savings in correlation with the nation's three million civil service employees and they approximate truckloads of even paper and pins.

Shortage Becoming Acute

The general report recited that "this program is founded on recognition of the need for a well-planned program toward the conservation of supplies and equipment in the government service, since the importance of saving and preservation in every element of production and consumption is becoming increasingly acute as the war progresses."

"The organization is simple"—so reads the report. And it is. First came the appointment of a Conservator for the Procurement Division. This is Major F. X. A. Eble who has the reputation of being an exponent of Efficiency in Conservation. Major Eble warningly points out that as a nation we are no longer too rich to worry. The Major is also the liaison officer who represents the Procurement Division with all agencies.

The Conservator has three assistants who are specialists respectively in (1) typewriters and all other machinery and equipment; (2) edu-

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cation, training and personnel, and (3) supplies. Under the direction of the Conservator these assistants develop policies and practical directions for the guidance of the program. They also constitute a Committee which receives and evaluates and acts on conservation suggestions from employees. And each operating division has a conservator assistant to represent the Conservator and carry out the details. These Conservator aides are appointed from the rank and file of employees, and are appointed with an eye to their dependability, knowledge of departmental routine and general office operations, and loyalty.

By this explanatory presentation the representatives of the departments, divisions, agencies and so on were told how conservation is being practiced by Treasury Procurement. They were not told what they had to do. And in the wisdom of the Sphinx the following three questions were propounded to them, being a breakdown of the famous "Knowest thou the meaning of this

1. What is your organization

now doing in the conservation of supplies, equipment and machines?

2. Have you a system for train-

ing employees in conservation?

3. What applies to you in the program now being used in the Procurement Division — would it

fit into your organization?
Three pertinent questions!

No New Bureau

Furthermore, Mr. Mack stressed that it was not his idea to create a new bureau, rather that the whole conservation idea contemplated that each department and its divisions should be responsible unto themselves only. Thus no toes were tread on. No authority was usurped. All concerned and interested were presented with the golden opportunity to do a creditable thing which was a sure winner from the standpoint of practical results, at a time when necessity dictated that something must be done. Treasury Procurement subtly supplied the needed leadership by presenting a workable plan that was productive of end benefits.

gets things done. He did not have to ponder over question No. 3, viz: "What applies to you in the program being used in the Procurement Division — would it fit into your organization?" His varied experience in procurement and his intimate

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HENRI A. BALES
Liaison Officer for Conservation
District of Columbia

knowledge of contemporary stringencies as reflected in CMP regulations, priority rulings, limitation and conservation orders, allocations, etc., had already inspired a major concept of conservation. Assuredly the conservation of stationery stores and office equipment was laudable, but why not apply conservation to all of the activities and to all of the materials and equipment used in the multi-activities of the District of Columbia?

Conservation Made Mandatory For Entire District

Mr. Brennan made a report to management, that is, the Board of Commissioners. Major Eble, Treasury Procurement Conservator, appeared before the Commissioners. Shortly thereafter C.O. 301, 405 was issued by the Board of Commissioners and sent to all departments of the District. It provided for the inauguration of a conservation program and organization therefor as follows:

"ORDERED: That a Conservation and Waste Prevention Program for the Government of the
District of Columbia, having for its
purpose avoidance of unnecessary
waste and the conservation of all
supplies and equipment, predicated
upon the basic Conservation program of the Procurement division
of the U. S. Treasury Department
is hereby adopted. This program
shall include also the use or procurement of surplus equipment in

Purchasing Agent Made Conservator

Board of Commissioners makes conservation mandatory in all departments and Washington becomes research laboratory in municipal economy

URCHASING Agent Roland M. Brennan represented the Board of Commissioners of the District of Columbia at the build-up conservation meetings held under the auspices of Treasury Procurement. As Purchasing Agent for the District of Columbia — which is a sort of combination city-state-county entity comprising all of the departments, divisions and services that go to make up such social units his procurement activities are as diversified as a Sears-Roebuck catalog. He buys materials for schools, penal and correctional institutions, fire, police, sanitation and water departments, hospitals, building, street and other departments-everything from bolts and nuts to soup and nuts. It seems that at one time or another he may be in the market for almost anything that humans have use for.

Accordingly he is well acquainted with materials, equipment and sup-

plies used by government in its myriad institutions. And of equal importance, he is quite familiar with the difficulties encountered these days procuring new materials, equipment and tools, and necessary maintenance, repair and operating supplies and parts. Day-in and dayout he is passing on requisitions, sending out proposals and signing orders of procurement. Without question he has of necessity applied his signature to purchase orders that would have been unnecessary had a program of conservation and salvage and "lend-lease" between municipal departments been diligently administered.

Opportunity For Big Job

Mr. Brennan is one of those unassuming human dynamos. He works quietly and smoothly. He doesn't dilly-dally in making appraisals and determinations. He good condition, when obtainable, in lieu of the procurement of new equipment of a critical nature, and also embrace the transfer or pooling of office machines and other office equipment whenever feasible.

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"Conservator: That the program shall be under the general direction of a Conservator, who is hereby authorized to inaugurate the program and to approve all policies and major procedures within its scope in conjunction with the advice of a Conservation Advisory Committee, hereinafter appointed.

"Conservation Advisory Committee: The Conservation Advisory Committee shall act as a Board of Review to consider suggestions from heads of departments and employees on conservation and waste prevention and shall consider employee training programs. Said Committee shall meet at least once every three weeks and shall advise the Conservator from time to time as the occasion demands.

"Deputy Conservators: In all major departments of the District of Columbia, heads of departments shall act as Deputy Conservators to the extent that their direction and

assistance is required to make the conservation program, so far as said departments are concerned, a success.

"Conservation Aides: Heads of departments shall recommend to the Conservator, the name or names of Conservator Aides in their respective departments and agencies, with their telephone extension and room number. Such nominations should be only for trusted, competent and diplomatic employees as they will be the front line troops of the whole conservation program, not only to carry the inspiration to and gain the cooperation of individual employees, but to be ever on the alert for broader opportunities within their respective sectional activities. Each person selected will be formally notified of his appointment by the Conservator and from time to time Conservator Aides will be instructed in their duties."

The order further provided that "in addition to his other duties, Roland M. Brennan, Purchasing Officer, D. C., will assume the duties and responsibilities of Conservator for the Government of the District of Columbia."

Conservator Brennan's Man-Friday in this new task is Henri A. Bales, Deputy Purchasing Officer, upon whose shoulders the Commissioners placed the responsibilities of General Liaison Officer on Conservation for the District of Columbia to aid the Conservator in organization and execution of the program.

The Conservation Advisory Committee established by the order is made up of Col. Joseph D. Arthur, Jr., Corps of Engineers, U. S. Army, Assistant Engineer Commissioner, D. C., as chairman; John Blake Gordon, Director of Sanitary Engineering; Walter L. Fowler, D. C. Budget Officer; A. R. Pilkerton, D. C. Auditor; and, Robert L. Haycock, Acting Superintendent of Schools (designated by the Board of Education).

Though the District program simulates that of Treasury Procurement, attention is directed to the fact that it has for its purpose "avoidance of unnecessary waste and the conservation of ALL supplies and equipment". Guided by this terse and all-inclusive phrase, the Conservator, the Advisory Committee, the Deputy Conserva-

DISTRICT OF COLUMBIA CONSERVATION PROGRAM H. A. Bales Board of Commissioners, D. C. Conservation General Liaison Officer Roland H. Brennan **Advisory Committee** Ext. 2260 Conservator Col. Jos. D. Arthur, Jr., Chairman Room 316 Ext. 449 Robt. L. Haycock John B. Gordon Walter L. Fowler A. R. Pilkerton **Deputy Conservators** Heads of Departments One to be selected for each department, office, or agency, by the head thereof and to be approved by the conservator.





The dearth of available supplies, which prompted the conservation program, is graphically shown in the empty shelves of the Procurement Division's sample room, and by the half-dozen chairs and lone file cabinet which represent the entire office furniture section.

tors and the Conservator Aides are launched in activities of far reaching possibilities.

Thus the Nation's Capital — the whole of the municipal government of the District of Columbia — becomes the nation's first civic conservation guinea pig, so to speak. In more dignified vein it might be said that the Municipal Government of the District of Columbia has become the first civic test laboratory where civic conservation has been made mandatory on a scale involv-

ing every community service.

The District plan, as stated, is not restricted to pencils and pens and typewriters and things like that there. It includes everything—everything from thumb tacks to diathermy units and tractors. No department, office or officer of the District of Columbia is immune or exempt. From mahogany desk to foreman's shack in the penal work yards, the order of 'the day is, "Waste Not. Conserve." Conservation is extending under the streets in the form of unreinforced concrete piping (where permissible).

to dogs in the form of plastic license tags, to inmates of institutions in the form of shorter shirts, to the fire and police departments, city refuse department, hospitals and institutions, water department, the office of the Board of Commissioners, to the executive office of the Purchasing Agent and Conservator, and so on ad infinitum.

In a memorandum to the Deputy Conservators, Mr. Brennan emphasized that the complete success of the program depends upon the close collaboration between them, their conservator aides and every clerk, typist or worker in the office, shop, kitchen or field. Department heads were therefore urged to exercise extreme care in the selection of conservator aides. The latter were notified of their selection by a form letter signed by Conservator Brennan, which said in part:

"Your designation for this assignment carries a mark of confidence in your capacity, your alertness and your good judgment, and I ask your serious and continuing attention to every opportunity falling within the intention of this program; your suggestions; your thoughtful observance of the practices of employees toward economical use of supplies; your help in developing the greatest



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skill in use, upkeep and preservation of equipment; your constant effort to effect full and advantageous use of employee's time; your prompt attendance at meetings — generally your wholehearted support. I shall rely upon you to carry out to the fullest possible effect in the section to which you are attached, such practices and principles as are announced for the guidance of the program".

These appointees were further advised that they would be the "Minute Men" or the "Molly Pitchers" to spread the spirit of conservation and gain the cooperation of all employees in their respective departments, plus the admonition that "upon you will depend in a major degree the success or failure of the plan".

The Front Line Troops

Mr. Brennan emphasizes that the conservator aides, being selected for their competency and tactfulness. are the front line troops of the whole program. Their job is to conserve supplies and to prevent waste. If the boss uses good paper for making doo-dads, they are to tactfully present him with a salvagepaper scratch pad; they are to see that backs of incoming letters are used for carrying the carbon copy of replies; that tires are conserved. motors kept in shape, wheels aligned; fabrics salvaged; that alcohol is not used as a shower bath: manhole covers properly set; paint brushes cleaned; foods adequately protected against spoilage; and so on without end throughout the various departments. Thus with eagle eye and open mind the Conservator. the Advisory Board, the Liaison Officer, the Deputy Conservators and the Conservator Aides are watching every detail, big and little. to conserve and to prevent waste.

Personnel training is an important phase of the program. It is carried on by meetings, personal instruction and motion pictures on the use, maintenance and care of

machines and other equipment and supplies in office and departmental

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The diversified nature and broad scope of the program is portrayed by the following partial list of pur-chases made by Mr. Brennan's office during the year: Acids, drugs, soaps, industrial and hospital gases, agricultural implements, small arms, blank forms, stationery stores, boat and ship fittings, boilers, engines, nuts, rivets and other fastenings, brooms, clothing, building material, hardware, paints, textiles, foodstuffs, electrical equipment and supplies and accessories, laboratory and surgical apparatus, machine tools, motor vehicles, musical instruments, pumps, paints, partitions, pipe fit-tings, radios, tableware, toiletries, hand tools, hose, school supplies and equipment, etc., etc.

Previous to the inauguration of the conservation program, incident to shortages and difficulties getting former standard-use materials, Pur. Agt. Brennan had commenced an incipient waste prevention and substitution program as opportunity offered. To conserve rubber he ordered plastic diaphragms for water meter parts, substituted common builder's board for plywood, synthetic resin sheeting for rubber sheeting, Onasburg textiles for canvas cot covers and other uses, and made kindred changes in vari-

ous city departments.

In the past he has issued bulletins and notices on the maintenance of machines and equipment and the conservation of supplies. But that was not sufficient. In efforts of this kind a well organized, mandatory program that will reach down to the users and operators is necessary. He is now the responsible head of just such a program. He has the hearty support of the Board of Commissioners. Recently an order was issued by the Commissioners which provides for the use of reclaimed and surplus equipment wherever possible which substantially buttresses another order to thoroughly investigate the possibility of pooling or transferring equipment before equipment. ordering new dovetails with Mr. Brennan's feeling that nothing should be discarded by a department unless authorized by the District's property survey officer, or by the conservation division, as it may be of value to someone else.

a year for foodstuffs for the hospitals, institutions and schools in the District of Columbia. He feels that this is one of the major procurement problems of the day, and that closer administrative control over food supplies is imperative. To this end he recommends the appointment of a Food Administrator, an expense that he feels would be many times justified by the savings that can be effected through careful administration of food distribution and use.

3. Fuel. Mr. Brennan feels that the expense of a Fuel Administrator would be more than justified through more careful supervision of heating and plant maintenance, with resultant savings in the consumption of fuel oil and coal. Last year he spent \$735,000 for coal and

oil.

4. Industries — Penal Institutions. He urged a thorough study of the manufacturing processes in the industrial department of the penal institutions looking to the development of opportunities for saving and conservation.

5. Shops and Garages. Care of tools, paint brushes and other small

> An attractive certificate of merit containing the official flag and seal of the District of Columbia and a citation, has been adopted by the Commissioners. This certificate is awarded to officials and employees of the District Government who have made substantial contributions to the objective of conservation and waste prevention, upon recommendation of the Conservator and the Conservation Advisory Committee. The fact of award will be spread upon the minutes of the Board of Commis-sioners and made a part of the employee's efficiency record.

Program Broadens in Scope

Potentialities are vastly increased as Conservator tackles problems of heavy equipment, motor vehicles, school supplies, food and fuel

NO TIME was lost in organiz-ing the Conservation Division after receipt of the order from the Board of Commissioners. Meetings were held by the Advisory Committee and with the conservator aides at which talks were made by Major Eble of Treasury Procurement and speakers from the WPB and other major departments of the Federal Government in which conservation is the shoptalk of the day.

In a meaty memorandum to the Conservation Advisory Committee, Conservator Brennan in the light of his experience as Purchasing Agent and intimate knowledge of departmental activities gained from over hirty years' service in the city government, recommended that serious consideration be given to the possibilities of waste prevention and conservation in the following catego-

1. Drugs, medical and hospital supplies. Hospitals, clinics, medical services, civilian defense, and some of the public welfare institutions.

2. Food. Mr. Brennan is spending approximately a million dollars



equipment; reclamation and repair of equipment by metal spraying; economical use of rubber; adequate lubricating schedules.

6. Pumping stations and incinerator plants. Efficient operation and care to avoid expensive replacements of equipment and supplies.

7. Fire apparatus. Here he placed the responsibilities on the shoulders of the Superintendent of Machinery, District of Columbia Fire Department, who is a Conservator Aide.

8. Motor transport and non-highway vehicles. Lubrication, prompt repair of worn parts, wheel alignment, preservation of anti-freeze. and utilization of metal spraying for repair work.

9. Civilian defense. Proper storage of perishable food supplies; protect drugs and rubber products against deterioration; storage of dry cell batteries.

10. School supplies and equip-Acting Superintendent of Schools is a member of the Conservation Advisory Committee.

Only the Beginning

This was only a starter. Conservator Brennan also urged that departments be vigilant as to the possibilities of salvage. And he suggested that it would be beneficial if each department were to furnish an inventory of idle and obsolete materials with a view to this material being made available elsewhere, stating that it would call for collaboration with the property survey division of the auditor's office. As a result of the meetings and the bulletins and instructions being issued the whole civic administration from bottom to top is Conservation Conscious. Savings of 15 to 30% are being made in stationery stores alone, for every one from the office boy to the steno and department head are careful not to waste even pins or paper clips. Stenographers and typists understand the import of "No new typewriters are to be had. Take good care of yours. It Office is good job insurance." workers seek to avoid demerit marks for infractions of the conservation rules.

It is in the field of "big game", however, that the conservation and waste prevention effort is achieving results that are strategic and important from the standpoint of sheer practicality and money saving. Incidentally, the deputy conservators or department heads have the benefit of a Conservation Commodity Reference File arranged in order of the Commodity Classification System used by the Purchasing Department, listing available equipment and supplies. Special bulletins are issued to department heads as information is received on usable equipment and materials.

That department heads are conservation-minded is shown by reports from different important departments. The Health Department, for instance, reports that by reducing the size there is a saving of 75% of the absorbent cotton balls formerly used, accompanied by a saving of 75% in alcohol and medication. A large saving in alcohol was also brought about by slight dilution of the former standard product without prejudicing its therapeutic effect; and a loan system was created between clinics for the lending of items formerly purchased for each clinic.

In the Water Department, reinforced concrete manhole covers are being used in lieu of all-iron frame and cover, with 90% saving in metal. In the municipal garage, cut and ridged brake drums are being turned-down; clutch pressure plates and clutch lever assemblies are being rebuilt, and the department is repairing fuel pumps, transmissions and carburetors and other worn parts that were formerly discarded.

The Traffic Department is now using metal from discarded signs to make new street signs, and is salvaging usable parts of traffic signals. The Surveyor's office is using a substitute for copper in cement walks for lot markers, and the printing department made six good lock-up frames out of eight discarded ones. At the sewage treatment plant, sludge filter cloths are now treated with copper sulfate to prevent deterioration; water is used in gas dome seals of digestors in place of oil, in all but freezing weather, and boiler water is now being properly treated to prevent damage by scale and dirt.

Shorten Shirts and Pants

At the clothing factory and knitting mill of the District's industrial institution, many drastic savings are being made, which include the elimination of vests from discharge suits, and cuffs from discharge trousers; shortening shirts; reducing the length of half hose; making knee length blue denim pants to be worn by inmates during the summer months; and conserving power. In the women's division, 1300 dozen handkerchiefs have been made from old sheets, and hundreds of other items such as blankets, gloves, slippers, brassieres and so on have been made from scraps of new material. old blankets, old feed bags, old uniforms and other discarded materials. The superintendent of the industrial laundry is saving materials and cutting costs through the installation of a chlorinator and motor generator set which is producing 150 gallons of bleaching solution a day at an operating cost of approximately \$1.50. The department had been using a bleaching powder at the rate of 90 pounds daily the price of which jumped to 16¢ per pound—when obtainable. This department made other changes which have effected a considerable saving in labor and replacement costs.

Police Department Conserves

The Police Department is cutting on the use of gasoline and supplies. The City Refuse Division has patched worn out truck boxes; it uses broken axles for fabricating machine parts and tools. This department is salvaging vital equipment parts through the use of a metal spraying machine. In its re-pair and salvage work it has found a way to efficiently use four-cylinder transmission gears on six-cylinder trucks. It salvages waste materials from the dumps and keeps the dump roads in good condition to prevent wear and tear of tires.

The Electrical Department is salvaging and reusing cable, rebuilding telephones, salvaging steel sign frames, inverting cans of paint, protecting tools and replacing broken tools with second-hand tools. Scrap lamp posts are repaired by welding. This department created what it styled the "Victory" cable joint which calls for the use of less solder, and employees are trained to wipe it properly.

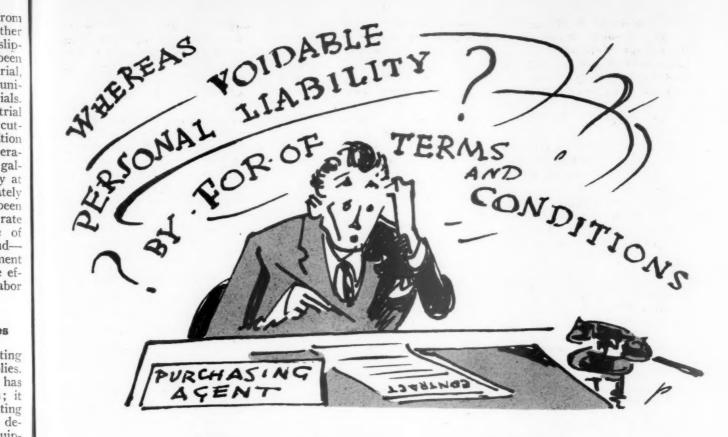
At the District's Glenn Dale Sanatorium, ward supplies have been standardized according to the type of patient in the wards, and a score card is kept on cleanliness and care of equipment and supplies; also, a sewing room was established for making new linen garments and nurses uniforms.

In another department, a store room is being used for cleaning. repairing, refinishing, stocking and issuing damaged furniture. It is felt that enough damaged equipment can be salvaged to take care of more than 75% of the equipment re-

(Continued on page 282)

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Does Contract Law Confuse You?

Strict attention to a few fundamental principles of form and practice will make your contracts legally effective

IT is agreed that general contract law is extremely complicated. Many volumes are necessary to explain all phases of the law on this subject. But contract law in which Purchasing Agents are interested is relatively simple. This is so because sale contracts include an extremely small strip of the law relating to contracts generally.

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Purchasing Agents are interested in knowing when a sale contract is valid; when it may be cancelled without any liability; when a guarantee or warranty is enforceable; when a seller may be held responsible for various losses sustained by a purchaser; when a seller is responsible for fraud or deceit; when the purchaser may sue and recover damages from a seller, and similar questions of ordinary sale contract law.

By LEO T. PARKER



Above all, readers must realize that "common sense" is the principle and controlling element pertaining to contracts for the sale of salable merchandise.

Partly Written Contracts

The fact that in a majority of instances Purchasing Agents are parties to partly written and partly verbal contracts, for purchase of merchandise, results in this subject presenting unusually interesting law.

Generally speaking, the law is settled by modern higher courts that when an agreement is reduced by the parties to writing, the written instrument expresses the ultimate intentions of the parties. In the absence of fraud, misrepresentation, or mutual mistake of the parties to a written contract, evidence is not admissible showing any verbal agreements intended to alter or modify the legal effect of the agreement.

On the other hand, if a verbal agreement is consistent with the written contract and does not alter the legal relations of the parties the court may hold that the entire contract consists of both the verbal conversation and the written instrument.

For illustration, in Hy v. Crawford, 147 Atl. 31, it was disclosed that a Purchasing Agent signed an order. He refused to pay for the goods on the contention that the salesman had represented that the merchandise would be satisfactory, and that the salesman offered to send the goods on approval.

The seller filed suit to collect the amount due contending that the verbal contract and guarantee made by the salesman was not effective, since it was not incorporated in the written order.

However, since the verbal agreement was *not* inconsistent or contradictory with the written order, the court said:

"The rule excluding parol evidence does not apply in cases where the original contract was verbal and entire and a part only of it is reduced to writing. . . . Whether the parties intended the writing to embody their entire oral agreement or only part of it, was a question for the trial court, to be determined from the conduct and language of the parties and the surrounding circumstances. . . . The evidence so received abundantly justified the conclusion that the written order did not and was not intended to constitute the entire contract between the parties.'

Contract Inconsistent

As previously stated, if a written contract is inconsistent with verbal statements the court usually will not consider testimony relative to the verbal agreements. However, extreme conditions may exist so that although the written contract contains a clause that no oral or verbal promises are a part of the agreement, yet the court will consider testimony relative to verbal agreements.

For instance, in Johns v. Heckart, 277 Pac. 823, it was disclosed that a salesman took from a purchaser a signed written contract for merchandise which contained a clause that the goods were to be shipped F.O.B. the seller's plant. The contract also contained the following notation:

"It is agreed that there are no promises, agreements, or understandings not expressed on this form."

Although the contract stated that the goods were sold F.O.B. the point of shipment the seller subsequently allowed the purchaser credit for these freight charges.

The purchaser refused to pay for the goods and the seller filed suit. The buyer testified that the salesman had verbally guaranteed the goods to be of quality better than the quality of the delivered merchandise.

The seller argued that the salesman's warranty could not be considered a part of the written contract, because the written contract plainly stated that "there are no promises, agreements or understandings not expressed on this form".

However, because the seller had failed to compel the buyer to pay the freight, in accordance with the terms of the written contract, the court held the buyer not bound by the other written terms, saying:

"The general rule is that parol evidence cannot be received to contradict or vary the terms of a written contract, and that when an agreement is reduced to writing it must be considered as expressing the ultimate intention of the parties to it. . . . There are exceptions, however, to this general rule. . . . In such cases, the contract is deemed only partially reduced to writing. . . . On its face the writing shows that the goods were sold F.O.B. point of shipment, and therefore, if the writing is to control, the defendant was to pay the freight. . . . but the evidence shows that this was not the obligation of defendant (purchas-

So, therefore, it is quite apparent that "common sense" often may be successfully relied upon when determining the rights and liabilities of buyers and sellers.

Exceptions to Law

Modern higher courts consistently hold that a verbal contract may be varied by verbal agreements made before or after the contract was completed. Moreover, a written contract may be modified by later written agreements. Furthermore, it is well settled that a written contract may be rescinded or canceled by either party upon proof that the complaining party was induced to enter into the agreement by fraudulent verbal or written statements of the other party. In other words, a valid written contract cannot be varied by verbal agreements, but a contract obtained by fraud or deceit is void irrespective of whether the fraud consists of written or verbal state-

And again, certain kinds of contracts are not valid, unless in writing.

For example, a contract relating to the sale of real estate; to long term leases of real property; and to the sale of certain kinds of chattels must be in writing, otherwise the contract is void. Moreover, a contract by which a person or firm guarantees the account of another, or guarantees performance of any agreement is required by law to be in writing. Also, a contract which legally is a written contract must be

completely written. In other words, a contract partly in writing and partly verbal legally is a verbal contract and the law pertaining to verbal contracts must be relied upon by a complaining party.

Thus circumstances may arise where an incomplete written contract expressing only a part of the obligations, which subsequently are by oral words made into the full contract, may automatically terminate into a verbal contract. And when the whole contract has not been reduced to writing, such a contract is regarded as a verbal contract subject to all the law of verbal contracts.

Writing Doesn't Govern

These points of the law were discussed in the late case of Naeve v. Shea, 258 N. W. 666.

The facts of this case are that a person filed suit to recover money on a contract. During the trial it became evident that the outcome of the controversy depended upon the legal construction to be given to the contract which was partly in writing and partly verbal.

The court held that all of the agreements must be construed under the laws governing verbal contracts and said:

"A written contract is one which, in all its terms, is in writing. A contract partly in writing and partly oral is, in legal effect, an oral contract... A contract cannot be said to be in writing unless the parties thereto, as well as the terms and provisions thereof, can be ascertained from the instrument itself."

Obviously, the language of a written contract speaks for itself, but the obligations of a verbal agreement must be proved to the court by testimony of the contracting parties and by witnesses. Therefore, it is quite apparent that litigations involving written contracts are less expensive and more quickly settled. when compared with suits involving verbal contracts which require a great deal of testimony by witnesses for both litigants. The outcome of suits involving verbal contracts always is uncertain because it is impossible to anticipate the testimony which will be given by the various witnesses. For these reasons it is advisable that all purchasers refrain from entering into verbal agreement or for any reason causing written contracts to become, legally, verbal contracts. This result can be avoided by both the buyer and seller signing properly dated written memoranda of any changes by subsequent agree-

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This law is merely "common sense" because it is apparent to all readers that a written contract supplemented by written additions remains a valid and legal written contract, but the laws pertaining to verbal agreements must be relied upon if a written contract subsequently is varied or changed by a verbal agreement.

What Is Valid Contract?

Many rules have been formulated as to a valid sale contract. However, a simple and practical rule is that it must not violate valid laws, and was made by legally authorized persons who *intended* to make a valid contract.

For example, in the leading case of Carrol v. Mitchell Company, 128 S. W. 446, it was disclosed that an authorized employe affixed his employer's signature to a contract with a rubber-stamp, but omitted the pen written signature.

Controversy developed over payment and the employer contended that the obligation was void because the contract was signed with a rubber-stamp and the pen written sig-

nature was omitted.

However, the court held the employer liable because it was proven that when the rubber-stamp signature was affixed both parties *intended* to complete a valid obligation. In still another case, (190 S. W. 1045) where the same point of the law was involved, a higher court said:

"The word 'writing' in law, not only means words traced with a pen or stamped, but printed or engraved or made legible by any other device." (For a leading higher court case involving a signature affixed with a typewriter, see 195 Pac. 316).

Another important point of law is that an employer is liable for the acts of a general agent as a wrongdoer, while under the same circumstances he may not be responsible for the acts of a special agent. According to the law laid down by the higher courts a general agent is an employe who has general authority 10 act for his employer in the conduction of a business or department of the business. For illustration, a manager of any department, or of a business itself is a general agent. And a Purchasing Agent may have special powers of a general agent granted by his employer.

A special agent is one who is authorized to act for his employer in a limited capacity, as doing only a

DO YOU KNOW

That your legal status and personal liability as Purchasing Agent is completely changed if the order form requires another official signature?

That any agent may be personally liable on a contract intended to bind his employer?

That the Purchasing Agent may become personally liable even though acting on direct authority and instructions from his employer?

That the little words "by", "for", or "of", preceding your signature, may be differently interpreted by the courts?

That a rubber stamp or typewritten signature may be just as binding as a hand-written one?

That there is a difference between "void" and "voidable" contracts?

That a verbal agreement modifying your written contract can bring the whole interpretation and litigation under the law of verbal contracts?

That failure to insist on any one contract term, such as the f.o.b. point, may void all other terms and conditions?

Make sure that YOUR purchase order and contract forms will stand up before the court and accomplish what you intend them to do.

single act. Always a Purchasing Agent is a special agent if sale contracts made by him must be approved or confirmed by his employer or some official. An employer is not liable on any contract made by a special agent, unless such agent is specially authorized to make the particular contract. And contrary to the opinion of a majority, any general or special agent may be personally liable on a contract intended to bind his employer.

Personal Liability

Generally speaking, an employe, as a Purchasing Agent, is personally liable when engaged in the performance of his employer's duties, (1) where he makes a false statement or representation of his authority without intent to deceive; (2) where he does a damaging act believing he has authority, but actually has none; (3) or where he acts on authority from his employer and does an unlawful act.

Moreover, an employe is personally liable on contracts which he signs, with proper authority, where his affixed signature does not clearly bind the employer. See Thompson v. Blackwell, 56 Ky. 490.

However, it must be remembered that an agent can be held personally liable on a contract intended to bind his employer only when the other party to the contract believed that the agent intended to be obligated. This circumstance may arise where, for instance, a contract of sale is signed by both a salesman and a Purchasing Agent and the salesman's employer approves the contract believing the Purchasing Agent intended to be personally obligated.

However, in view of the numerous previously decided higher court cases, it is well established that a Purchasing Agent is relieved of all risk of personal liability on contracts, or other papers, which he signs with proper authority of his

employer provided: The name of his employer appears in the body of the contract, or on the letterhead; (2) the word "By", "For", or "Per" precedes his signature; (3) the word "Agent" follows his signature; (4) and the employer's name precedes the agent's signature, as follows: "The Atlas Company, By, John Doe, Purchasing Agent".

Sometimes, the mere difference between the words "By", "For" and "Of" are sufficiently important to have considerable bearing on the outcome of the liability of an employe who signs contracts for his

employers.

This point of the law was thoroughly considered by the court in the leading case of Tucker Mfg. Company v. Fairbanks, 98 Mass. 101. Here the contract was signed by an agent without prefixing either the word "By" or "For". The name of the employer did not appear in the body of the contract, and the court held the agent personally liable on the contract, stating the following law:

"The variation between the words 'for' and 'of' seems at first view slight; but in connection in which they are used in signatures of this kind the difference is sub-

stantial."

Apparently, these various points of the established law primarily and originally were based upon "common sense".

Brief Review

Obviously, an invalid contract may not be enforced by either party and, therefore, litigation of it always is unprofitable. Consequently, considerable trouble and expense can be eliminated by readers who are able, by reference to a definite legal rule, to distinguish an invalid from a valid contract. The modern higher courts have held that a contract is valid and enforceable if

 One party submitted an offer which the other party uncondi-

tionally accepted in detail;

(2) Neither party deceived, misrepresented, or exerted unlawful influence with respect to the other party to obtain the contract;

(3) Both parties agreed absolutely to perform a definite act;

(4) Both parties were of legal age and of sound mind when the contract was made;

(5) Both parties had proper authority to make the contract; and

(6) The objects of the contract were lawful and not against public policy.

Also, the law is well settled that either a buyer or seller may legally

cancel any contract obtained by the other as a result of direct or indirect fraud, misrepresentation, coercion, undue influence, duress, threats, or where the contract is made without proper authority of the employer's employe, or while the latter is mentally deficient, intoxicated, under influence of drugs, or under legal age.

Moreover, there are certain kinds of contracts which are void, such as those that are against public policy, prohibited by law, tending to effect immorality and having an illegal object. For example, a contract is void by which a seller agrees to make an

illegal sale.

The distinction between "void" and "voidable" contracts is that neither party may compel the other to fulfill his obligations under a void contract, whereas the complaining party may use his pleasure in either declaring a "voidable" contract void or he may require the other party to fulfill his obligations.

For illustration, if a minor makes a contract, he may even go so far as to accept the benefits and then declare the contract voidable and refuse payment, because a minor cannot be held responsible on a contract

that he declares voidable.

Distinction of Liability

Frequently, the outcome of a litigation involving a contract depends upon whether the one being sued is a private individual, partnership, or corporation.

One advantage of incorporating a business is that a corporation usually is not liable for any act of an employe not within the scope of the employment, or for contracts not within the scope of the business as defined by the corporation's charter, and not authorized by the directors. Moreover, any person who transacts business with a corporation is bound to know that the official or employe who assumes to represent the corporation is legally authorized

to bind the corporation.

It is, also, important to know that an individual is liable for contracts for purchase of merchandise made by an employe, who acts within the scope of the employment, and a partnership is liable for all acts of all partners, within the scope of the business. However, a corporation is not liable on sale contracts made by an employe who acts within the scope of his employment and within the scope of the business, but outside the scope of the corporation's charter. In fact, corporations are not liable for obligations created by contracts signed by duly elected

officers, unless the subject matter of the obligations may fairly be construed as being within the scope of the corporation's charter. Moreover, a corporation is not liable for unauthorized contracts made by its officers, particularly where the company is not benefited.

On the other hand, there are certain legal rights to be considered when determining the obligations of contracting parties, including cor-

porations.

For illustration, the higher courts consistently hold that a corporation is liable for unauthorized acts of any agent, employe or officer, if the directors of the corporation ratify the agreement, or permit the corporation to benefit by it.

Partnership or Corporation

Although a corporation has many and distinct advantages over either an individual or partnership business, yet there are many disadvantages and risks incurred when changing from individual or partner ownership to a corporation.

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On the other hand, while the important advantage of an ordinary partnership business is that two or more persons may unite their money, labor, services and ability for the purpose of operating a business, the great disadvantage of a partnership is that any one partner, or other person who leads creditors to believe that he is a legal partner, may be personally liable for the total debts or obligations of the entire partnership, providing the other partners are insolvent.

Another important point of the established law is that one partner actually may appropriate money, valuables, or merchandise of the partnership without being criminally liable to the other partners. And any one partner may bind all other partners on a debt or obligation, which relates to the partnership business. Moreover, all contracts made by either partner, relating to the partnership business, is binding on all other partners.

An example of this law is found in a recent litigation involving a partnership of three partners. Only one partner was financially responsible. One of the other partners contracted to sell several car loads of merchandise. The price of the merchandise advanced and the partnership was compelled to fill the order at a great loss or pay heavy damages. The single partner who was financially responsible was compelled to pay the purchaser the full amount of damages.

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RE-STUDY YOUR SHIPMENTS

Containers and packaging methods can become obsolete as quickly as the products inside

Review your container situation now, with an eye toward better protection, conservation of critical materials, and possible re-use

THE Purchasing Agent has some degree of authority over shipping containers and methods in two directions. In one direction, he can suggest, supervise or even designate the selection of containers, loadings and routes on goods which are shipped to his company. In the other direction, he buys the containers, packaging material and other protective devices for shipping by his company. And in a majority of cases, his department has partial or total authority over outgoing routes.

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This position is important. Right now, breakage, damage and delay of goods in transit is altogether too high. And when goods are damaged, as a rule the collection of claims—if any are collected—from carriers is like putting a bandage over a wound. The collection of the money does not heal the hurt, it only covers it. For the real hurt is that the goods are badly needed by the consignee, and they can be replaced only slowly or perhaps not at all.

A well designed case must support itself, and must not be braced by its fragile contents.



By E. L. CADY

A great many of the problems of shipping are due directly to the war program. Millions of boxes of canned goods per month are going overseas, and the containers in which they are shipped will never be returned for re-use or re-processing in the United States. Add to



Some products present awkward packaging problems. The three sections of this fan might shift and move so as to damage each other, but a specially designed carton holds the entire unit securely.

this the shipping cases needed for munitions, and those going to army camps, etc., and a very substantial slice of the normal supply of containers and materials is being sucked from the commercial market. And in addition to these burdens, the container makers are facing increasingly serious skilled labor problems; many of their best men are claimed by the armed services or taken away by the high wage munitions plants, and their available replacements are not of the type which is easiest to train.

All of those difficulties add up to the fact that better use must be made of the materials and facilities which are available. The whole problem of shipping containers, materials and methods, is due for re-study.

Modern Hazards

One of the first points to consider, is that more of the difficulties have been blamed upon the war program than that factor really deserves. The situation has been developing over

The same type of material used for the outer shell may be used for the secondary or interior material.





Labels help to ensure safe handling of shipments. The Association of American Railroads recommends labels like the one shown herewith—large (10 x 7½ inches); attention compelling (red. black, and white); and with the fewest possible number of words to indicate the nature of the shipment.

a number of years. Due to the red hot competition between the rails, the trucks, the boats and even the

Studies made by some shippers show that the effects of higher travelling speeds upon packages can be cumulative. The fatigue resistance of a package may be more important than its ability to stand a single excessive shock. In one shipping container laboratory, for example, it was found that a package which withstood dropping from a height of six feet when fully loaded, would not stand fifty drops from a height of one inch. The latter weakness was what caused the package to fail in service. For the hard bumping. "baggage smashing" type of handling is rare with modern carriers. but the increase in the number and severity of smaller stresses is inescapable.

Plan for Re-Use

More re-use of packages and materials is necessary. To that end it was recommended as early as three years ago that printing on burlap tainers often can be picked up from local retail stores, reinforced with modern tapes, and used for shipping. There are more types of tape than ever before, they are more varied and adaptable, their strength and holding abilities are higher. And the skillful use of tape may represent the difference between a re-usable container and a less re-usable one.

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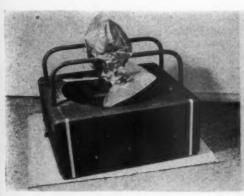
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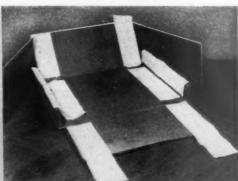
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Secondary Materials

Modern wrapping materials are better. Some of these are laminated so they contain one surface material for smoothness and beauty, one inner material for resistance to tearing and for general strength, another inner material for waterproofing, still another for cushioning effect, and so on. Because of these laminations, these wrapping materials often are refused by the scrap dealers who buy old paper and sell it to paper mills, therefore the chances







Steps in the closing of an engineered container. The use of secondary materials simplifies the structure and gives added protection to contents.

planes, shipments are being handled faster than ever before. Packages get into and out of terminals faster. Travelling speeds are higher. There is more of mechanical handling. Capacities of freight cars, truck bodies, etc., are higher; the compressive strength needed by packages may be higher accordingly. In many cases the periodic vibrations which can come with high travelling speeds have either been eliminated by the carriers or have been reduced to the non-damaging point, but in other cases the damage done to containers and their contents by vibration enroute must be given more study. With nearly all overland carriers the braking decelerations are faster and the curves are taken at higher speeds, both of which factors put higher stresses on containers and bracings. Such shipping problems as these are not due directly to the war; they would exist and would demand re-studies if times were "normal".

bags be avoided, for a shortage of burlap was looming even then. Now the same urgency applies to containers made of lumber and paper.

In most instances, package and contanier design has envisioned that the package would be destroyed or retained by the recipient. Advertising value has been of far greater importance than returning the package, dunnage, etc., to the shipper for re-use.

Packages can be re-selected or redesigned for easy knocked-down returns to shippers, thus relieving shortages directly. Or they can be so designed as to invite re-use by such recipients as wholesalers, manufacturers and farmers.

Modern tapes for sealing are worthy of more study. They permit the conversion of incoming packages, cartons and other protections to outgoing shipping uses. And in cases of really severe shortage, con-

of these materials being returned or converted for re-use are high. The use of wrappings can reduce bulk of packages and permit more to be put into one freight car or motor truck. Wrappings are helpful when many small packages are to be sent to one destination; they help to protect and to consolidate the smaller shipments. Often the resiliency of the wrapping is the one best protection against the cumulative effects of modern travelling speeds.

Modern secondary materials for cushioning, separating, protecting against abrasion, etc., are greatly improved. Secondary materials are becoming more necessary as new shipping codes and rules require that the cases shall support the objects shipped and that the contents may not support the cases, for in many formerly acceptable packages the container, in bracing the contents against movements within it-

self, made the contents act as supports for its walls.

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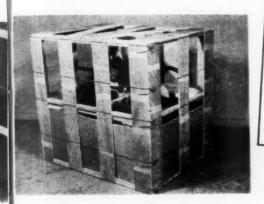
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Often containers are so designed that it is impossible to remove the contents without damaging the packages. This, of course, is a deterrent to re-use. Secondary materials often can eliminate this problem.

Secondary materials sometimes must be sufficient to absorb any liquids which may leak if glass containers, etc., are fractured enroute. Special types of modern secondary materials are at once more absorbent and more resilient to prevent the fractures.

Progress in Design

Wooden boxes of modern types are a far cry from the old fashioned "saw it and nail it" cases. In most instances, modern boxes are engineered to their jobs. Their panels or parts may be of solid wood or of plywood sheets which are laminated

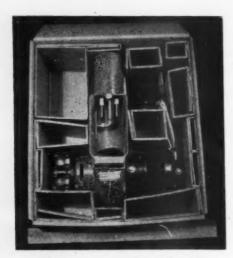


to give various types of controlled strengths. Box makers understand and take advantage of all the modern techniques of steel strapping, wire binding, etc. In many cases the wooden boxes, crates and other protections are shipped knocked down, ready for easy and direct application to the products which they are to protect; these are among the easiest with which to set up programs for returns and re-use.

Leading box makers maintain laboratories to which products may be shipped for package and protection design. The average saving reported by one such laboratory, on products to which the company's products are applicable, is 25% on shipping labor, container cost and tare. To such laboratories and to the sales engineers of all companies.

Container analysis by which one manufacturer's laboratory compares old and new practices and the costs involved.

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Distribution of weight within the package helps to prevent damage and eases problems of handling and storage.

all sorts of modern shipping problems may be brought.

Quick loading, unloading and rehandling of heavy packages, can be helped by using wooden boxes which are equipped with stacking skids. The forks of lift trucks can get beneath these skids, either within piles or stacks of boxes or at floor levels.

Fibre containers of the solid and the corrugated types have constantly kept ahead of modern problems in their designs. One of the greatest advantages of fibre is that the same type of material which makes up the outside case can be used for panelling, supports or other secondary materials.

Fibre containers also lend themselves more to return for re-use than is generally considered. Re-use may need changes in sealing methods.

Simplified Practice

Studies by packaging engineers have made it possible to eliminate hundreds of packages from a manufacturer's shipping room, reducing the sizes and shapes used to a minimum. This means elimination of headaches in the buying of packages, reduction of storage space needed, simplification of supervision and training of personnel in the shipping room, and easing of all sorts of container problems.

Modern steel strapping and other binders are being used more and more to defeat the stresses of high speed travelling and to reduce other problems of containers and shipping. Straps can add strength at the exact spots where the stresses come, thus permitting all other materials to be lighter, easier to handle and easier to assemble.

Strapping is a quick way to fasten many smaller packages into one large one, thus making use of the unit shipping principle, speeding up handling, and making one unit reinforce and protect another. Strapping also helps with return and re-use problems; the strapping from one original container often being the one best device for fastening several knocked down or folded containers or sections of wrapping materials together for shipment back to the original shipper.

Often, the one resource which will best solve modern container and shipping problems, is a re-survey of those problems by the companies and suppliers which originally studied them in the working out of present methods. The resurveys will simply be designed to meet present day conditions.

Ready to Help You

There are other sources of help. One is the Association of American Railroads. Besides having a corps of specialist engineers for shipping problems, this association has issued a series of new pamphlets designed to bring shipping methods in line with modern knowledge. Mr. L. S. Knott, Secretary of Operating and Transportation Division, Association of American Railroads, 59 East

Van Buren St., Chicago, Ill., is in charge of this activity.

The Railway Express Agency, with main office at 230 Park Ave., New York City, and main divisional offices at Chicago, Atlanta and San Francisco, has a similar service. Engineers of this company even make suggestions to product designers to improve the shipping qualities of products. Individual railroads, trucking companies, etc., also have their shipping engineering services.

There are consulting services on shipping problems. But perhaps the best resource of the Purchasing Agent is to add a shipping and container expert to his own staff, if the operation is large enough to warrant full-time attention. It is a logical extension of the principle of specialization in purchasing, and a number of companies have done so with most profitable results.

Shipping problems and opportunities for savings are not solely a by-product of the war emergency. For years the progressive Purchasing Agent has been reaching further and further into the plants of his suppliers and into the offices of his company's customers, helping to bind all of them into closely cooperating units. Closer two-way supervision of shipping practices gives him closer control of one of the physical means by which all are connected.

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APPLICATIONS FOR CONTROLLED MATERIALS

End-use Should Not be Traced—Applicants Should Analyze Orders on Basis of CA Symbols

Manufacturers operating under the Controlled Materials Plan must not attempt to trace the ultimate end-use of their products for the purpose of indicating the Claimant Agency pattern which is required in Section A of Form CMP-4B application, the War Production Board points out, in announcing Interpretation No. 18 to CMP Reg. No. 1.

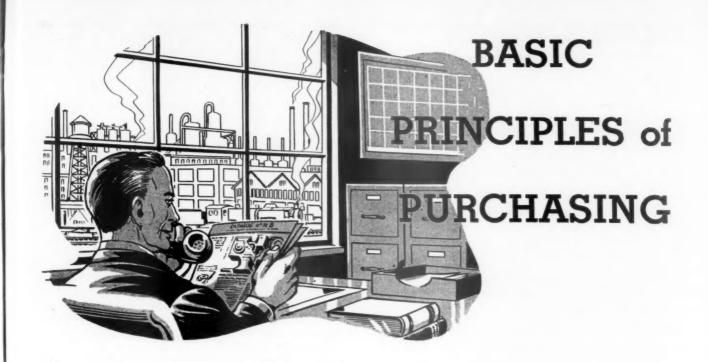
Applicants must analyze orders on the basis of Claimant Agency symbols appearing on their customers' orders in making application for controlled materials. If no Claimant Agency symbol appears, the order must be reported under "unidentified."

For example, if an applicant receives an order with a preference rating bearing the symbol B-1, he should report this under the symbol B, even if he knows that particular order is for a component of a prod-

uct which will eventually be sold to the Navy.

A person who receives a rated order must accept and fill it in accordance with the terms of Priorities Regulation No. 1, whether or not it is identified by a Claimant Agency symbol. He may not assume that his customer is required to show a symbol on his order since in many cases it is not necessary to do so in applying and extending a rating.

Attention is called to the provisions of paragraph (f) of CMP Regulation No. 3 (see Interpretation No. 3 to CMP Regulation No. 3) and paragraph (z) of CMP Regulation No. 6 which require compulsory use of Claimant Agency symbols for purposes of identification on certain rated orders. Class B product producers are permitted to call attention of their customers to these provisions.



X. ETHICS OF PURCHASING

A S THE industrial purchasing function has developed over the course of years, with an increasing background of actual experience in procuring the material requirements of manufacturing and operating schedules, certain well defined standards of practice have emerged. At the same time, a general pattern of methods and procedures has been developed to implement these standards. Some of these have been outlined in previous chapters, setting forth the standards of performance which mark the competent and efficient

purchasing department.

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Common observation, however, indicates that even the strictest observation or attainment of these performance standards is not sufficient in itself to give the company maximum value from the purchasing operation. The figures in the purchase ledger tell only a part of the story. There are relationships to be considered, both within the company and with its suppliers, that are equally important. As the point of personal contact between the firm and its suppliers—in interviews, negotiation, correspondence, and business dealings generally -the purchasing department is to a large extent the maker and the custodian of the company's reputation in the trade. And from a more selfish viewpoint, directly reflected in the record of purchasing performance, the ability to enlist the active cooperation of suppliers and to secure the thousand and one "plus values" of service that make for superior procurement, is not measured by astute placement of orders and mechanical efficiency. These factors depend on standards of conduct-otherwise known as ethics.

Practical Rewards

It would be trite to repeat here the dozens of maxims that have been coined to express our folk-wisdom on the practical value of ethical conduct. They would probably be discounted on the grounds of sentimentality or idealism. But our hard-headed philosophers have been far from idealistic in urging the point. They haven't emphasized the moral angle, but the practical reward.

So far as industrial purchasing is concerned, their premises and promises are demonstrably sound. No matter how much legislation is passed to outlaw so-called discrimination between customers, human nature will continue to be a dominating factor in the relationship between buyers and sellers, and sellers will respond to courtesy and fair dealing with the all-out service and cooperation that frequently represents the difference between a merely adequate purchasing performance and a major contribution to production efficiency and profit position. In purchasing for any going concern (and except for a few opportunist enterprises of the "war baby" class, most companies hope to be in business a year and ten years hence)—quite aside from any moral considerations, and beyond mere conformance with the letter of the law, a high ethical standard pays exceedingly liberal dividends.

Fundamental Attitudes

A broad generalization on fundamental attitudes and policy may conceivably embrace a complete ethical creed. It would include truth and fair dealing, scrupulous fulfillment of one's obligations, living up to the spirit of a contract as well as its letter, the exercise of mutual confidence, courtesy and consideration. But generalization is not enough. There are specific applications which give life and practical meaning to the code, and not a few interpretations that deserve more detailed clarification, being the subject of frequent criticism and difference of opinion, if not outright controversy. In this analysis, four aspects of the subject will be considered:

- 1. Obligations inherent in the purchasing function.
- 2. Common honesty.
- 3. Obligations to the supplier.
- 4. Sharp practice.

The line of demarcation is not sharply drawn. Almost any one of the situations in which an ethical problem may be raised could be considered from any or all of these viewpoints, but it is helpful to bear the fourfold problem in mind in any particular analysis.

Ethics Begin at Home

At the outset, it must be recognized that the Purchasing Agent has a basic ethical responsibility to his own company—to do the job for which his position in the organization exists; to consider first the interests of his company in every transaction; to secure the greatest ultimate value for every dollar of expenditure; to know and to protect the legitimate rights of the company as a party to each negotiation and contract; to promote the company's good name and reputation through the conduct of the purchasing office.

There can be no ethical code without this fundamental concept of doing one's job. Arguments that would modify this claim in any way are specious, being a denial of the very reason for the existence of a purchasing department. And it is a responsibility that cannot be delegated by the purchasing officer. Confidence in a supplier is an essential of any sound purchasing program, but the buyer is grossly neglectful of his duty who unquestioningly accepts the oft-heard advice: "Select a reliable vendor, then trust him to prescribe the right material and to charge a fair price." The classic admonition—"Let the buyer beware!"—was coined for such as him. No honest buyer apologizes for making an acceptance test or analyzing a quotation. These check-ups are the test of his own performance as well as of his supplier's.

For the most part, sellers respect the buyer who is alert and conscientious in the conduct of his office, and respond in kind. In such a department, selling is placed on the truly competitive plane of offering maximum utility and value—instead of merely goods and prices—a situation welcomed by the vendors who are able to support these claims. Service is more likely to be satisfactory since the seller knows exactly what is expected of him, and he has a reasonable assurance that the decision will be made fairly on the basis of facts that he may be able to demonstrate.

Commercial Bribery

It needs no special code to establish the obvious and fundamental requirement of common financial honesty in purchasing as in every other field. The particular aspect of this applicable to purchasing, the temptation that springs from the buyer's position as the dispenser of his company's patronage (in the best sense of the word), is commercial bribery. The practice is, of course, illegal and subject to punishment by civil action, both for the offering and the acceptance of a bribe. Aside from this legal implication, it is merely an extension, or a special manifestation, of the principle set forth in the previous section. The Purchasing Agent's ethical responsibility to his own employer would preclude acceptance of any personal fee or "cut" for performing the duties of his office, more especially since it it obviously offered-or sought-in an effort to influence his judgment and decision. And since it is equally obvious that any such payments must eventually be recovered in the form of additional product costs, it follows that the company, and not the vendor, is the one who foots the bill-for no value whatsoever.

Commercial bribery is specifically denounced in the Purchasing Agents' code, a decalogue compiled some years ago when the practice was far more flagrant than at the present time, though it would be excessively naive to say that no examples of commercial bribery could be found today. Human nature being what it is—with occasional instances of quack doctors, shyster

lawyers, reachable judges, religious fakirs, and charlatan professors in the ranks of our most esteemed professions—we may scarcely look for a 100% pure record in the commercial field. But the inclusion of this article in the creed is neither a confession nor an accusation; it is the forthright condemnation of an evil. Even murder and theft are not so obvious as to be excluded from the Biblical prohibitions.

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More significant is the fact that the National Association of Purchasing Agents took a leading part in the disclosure and prosecution of this bad practice, and in strengthening the statutes to curb it. The code denounces commercial bribery in "all forms and manifestations", and some of the classic test cases and precedents, while equally vicious in their effect on purchasing, actually lie outside the purchasing department. Just as the purchasing executive is in a peculiarly vulnerable position to meet this temptation, so he is in an excellent strategic position to detect and put an end to the practice, wherever it may be found.

Many companies, on the initiative of the purchasing executive, lean backwards in their efforts to discourage the practice, to the extent of refusing and returning even the token gifts which vendors and their salesmen customarily distribute to customers at the Christmas season. In such cases, a formal statement of the policy is mailed to all suppliers, some weeks in advance of the holidays. While this does strike at a potentially dangerous evasion of the bribery problem, it is also applied to routine remembrances of slight intrinsic value and to those which may be honestly prompted by real personal friendships. Like any all-inclusive ruling, this policy can be carried to ridiculous extremes. But since the Purchasing Agent, from the very nature of his position, is exceedingly vulnerable on this point, he must be free from even the slightest suspicion.

A department head, concerned with prestige and efficiency and freedom of choice in his buying operation, will avoid placing himself or his department under any obligation to suppliers, as a matter of ordinary good business policy. The buyers farther down the line in the organization scale may not be so strongly motivated by such considerations. It may be pertinent here to call attention to the tremendous responsibility of even a junior buyer in the allocation and disbursement of large sums in the form of purchase orders, and to suggest that a most effectual incentive for high ethical standards would be a salary scale commensurate with that responsibility, which some companies have apparently overlooked.

The Expense Account

Somewhat allied to this is the question of accepting entertainment, which may run all the way from a simple luncheon in the regular course of the business day to elaborate parties that imply a definite obligation. As in the case of the Christmas gift, it may be a perfectly innocent and innocuous detail that becomes a problem only through the possibility of abuse. The casual meals or cocktails which make up the great majority of such instances are merely the normal expressions of personal friendship or of time-saving expediency. It would be prudish and captious in the extreme to raise any serious question on this score, for a cordial personal relationship with business associates is at once one of the great rewards and great assets of doing business. The Purchasing Agent himself is in the best position to judge when this point has been exceeded.

The usual explanation or excuse by which the salesman pays, is his privilege of charging it to the expense account. That is a practical argument, but not entirely

sound. The facetious references to a reversal of this process in times of sellers' markets is a trivial but significant indicator of the dangerous interpretations that may ensue. If the relationship is on a friendship basis, self-respect demands that the Purchasing Agent should pay his share. Since company prestige is also involved—and the very insignificance of the amounts at stake emphasize the importance of this phase—there is every reason why a similar expense account should be available to the buyer. It is a small price indeed for maintaining a position free from any taint of obligation.

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Purchasing Agents should know, if they are not already aware, that they are quickly classified among the sales fraternity by the amount of entertainment they expect or will accept, and they are equally at a disadvantage in the salesman's estimation if a low price or a high price is set upon their social favors. And salesmen speak with real respect of the buyer who "doesn't let them spend a dime" when they are together. It is both an ethical and a fiscal problem, and the purchasing expense account seems to be the most practical and effective answer.

Conserving Time

The eternal problems of calling hours and waiting time are frequently regarded merely as matters of courtesy and efficiency, as though these qualities—or rather, the lack of them—were responsible for the problem in the first place. But as a matter of fact, courtesy and efficiency are only the means of dealing with and modifying the effects of a problem whose roots go much deeper. It is helpful to study this situation in the light of its ethical connotations.

Salesmen may regret, but they cannot resent, the necessity of waiting their turn if other salesmen are waiting in line ahead of them in the reception room, and if the Purchasing Agent is actually engaged in interviewing. The blame, if any, attaches to the fellow who got there first and is taking up too much time. Even if one of their number is passed in ahead by virtue of a previously made appointment, that can be set down to superior foresight on his part.

What salesmen legitimately resent is the wanton and avoidable waste of their time, which is one of their chief productive assets. An hour spent in cooling one's heels in the waiting room can never be replaced. And it is further argued that a policy of restricted calling hours unduly curtails the salesman's opportunity of profitably using his time and covering his territory.

It is indubitably the Purchasing Agent's responsibility to conserve the time of those who call upon him, so far as possible, even at the expense of some inconvenience in arranging his own work schedule. What is not so generally acknowledged is that this applies to interviewing time as well as waiting time. There are many instances—and the Purchasing Agent is the best judge of this—when no useful purpose can be served by an extended interview. There are any number of perfectly legitimate reasons why this may be the case. Under such circumstances, the most considerate action may be the brief stand-up interview at the railing or handling the call by internal telephone, and doing this just as promptly as possible after the caller has been announced instead of waiting his turn. It can be done with no lack of courtesy. Routine, exploratory, goodwill and follow-up calls, though they have their proper place in selling tactics, are subject to abuse and may be time-wasting on their own account. To encourage a wait for the purpose of granting a useless interview is doubly wasteful.

The salesman is entitled to an interview on the occasion of his first call. In many companies that first interview is with the head of the purchasing department, after which he is referred to the particular buyer concerned with the procurement of his product. The man who comes on a legitimate business mission is entitled to a fair hearing-with as much time as may be required for an adequate presentation, and with access to technical or operating personnel, through the purchasing department, if those contacts seem desirable. After that, the importance of subsequent calls and the time to be allotted to them are matters for the buyer's decision, remembering that his time as well as the sales-man's time is to be conserved. The caller who is equipped and trained to utilize that time most constructively assures himself of the most spontaneous welcome. Brevity in interviewing, to the extent consistent with coverage of the matter in hand, may well be the sign of the greatest consideration, both to the particular salesman and to those who may be waiting. The wise salesman extends the effectiveness of his call, not by prolonging the interview, but by leaving ideas and information to work for him after the personal interview is over.

The policy of restricted hours for interviewing salesmen may be overdone, though it is an exceedingly useful way of providing time for other departmental duties. It should of course be relaxed for the out-of-town representative whose traveling schedule is not always predictable and cannot be readily adapted to rigid regulations. What is not always remembered in criticizing the system of restricted hours, is that it is the means of providing the time for more extended, unhurried interviews on important materials and negotiations, by appointment, when they will not be interrupted or under pressure because of a waiting line, and will not interfere with promptness in seeing the regular run of visitors.

During the Interview

In the conduct of the interview, it is scarcely necessary to repeat that the principles of truth and common honesty are basic. There is no possible justification for citing or implying fictitious quotations to beat down a price. Quite the contrary. Except in the case of public bid openings characteristic of governmental buying, quotations are to be regarded as confidential data and that confidence should be respected by the buyer. There is no surer and quicker way of destroying the confidence of a supplier than by peddling his bid around to competitors, whether such disclosure is voluntary on the part of the buyer, or is in response to another's questioning. Nor can it add to the buyer's confidence in a vendor when the quotation is made dependent on what the other fellow is doing in a particular instance.

Quotations should be regarded as "firm" bids, representing what the vendor is able and willing to do under the conditions of the order. They are not to be used as levers for forcing down another's price; nor should they be, in themselves, subject to revision except in the event of some pertinent change in the conditions surrounding the requirement or in case of an error in calculations detected before the bids have actually come up for consideration. Only under the "firm bid" system can the buyer have any assurance that he is getting the best proposal, but consistent adherence to this policy will achieve that result in the long run.

There is no objection, ethical or otherwise, in telling the unsuccessful bidder that he lost the order because his price was too high, if that be the case. It is a matter of courtesy, and fairness to the bidder, to advise him that the business has been let, rather than waiting for his follow-up after the fact. Vendors don't like to have a lot of bids dangling, and if their capacity is somewhat limited they may not be able to afford being placed in such a position. A frank statement of why the vendor failed to get the order, whether because of price or any other factor, is the best way of improving his opportunity to be of service and to become a successful bidder on future transactions.

But the use and disclosure of confidential price information from competitors is not necessary to accomplish this desirable end. It is the unfortunate characteristic of questionable ethics that they breed further unethical conduct in return. If the Purchasing Agent volunteers this type of information, in most cases he isn't going to be believed anyway, no matter how truthful his report may be. And it will be accepted as the invitation for trading tactics, which always start with a liberal margin and end with no assurance that the most favorable terms have been attained. If the information is asked by the competing vendor, the likelihood is that he has in mind the pricing policy of "all that the traffic will bear, and still get the order."

Questions Without Answers

The Purchasing Agent is under no ethical compulsion to answer questions other than those directly relating to the negotiation in hand, that will help toward a more satisfactory transaction. As a general rule the policy of frank and free discussion leads to better mutual understanding and consequently to a better purchase, but there are instances where factors other than

price are also of a confidential nature.

Some sellers, for example, decline to sell unless they know the use to which their product is to be put. They argue that unsatisfactory performance on a job for which the product was never intended might react unfairly against the reputation of the product and the producer, and they prefer to forego a sale rather than risk the unjustified demerit. They point out, very logically, that with a knowledge of what is to be required they can recommend or prescribe the best materials for the purpose, thus assisting the buyer in his selection. They sometimes have a sliding price scale according to the application of their material, a practice for which the logic is somewhat more obscure. Though "trade secrets" are much less of a factor in industry today than they were a generation ago, there are still a few things that a company may wish to keep strictly "within the family"-little kinks of manufacture that make for the individuality of their product, or short-cuts that give them a slight edge in competitive costs. They have no desire to broadcast the direction of their experimental program or to have the vendor's salesman scurry around to their competitors with the "new idea". Consequently the Purchasing Agent becomes very reticent about the proposed uses for his purchase. He need not be concerned about any accusations that such conduct is unethical. But on the other hand he must recognize that under such circumstances there is no implied warranty of performance on the part of the seller, and the buyer has no basis for expressing dissatisfaction or pressing a claim for any unsuitability in his purchase. The seller, being in the dark as to the intended use, is bound only to the extent of conformance to whatever specifications may be set forth in the order.

A Fair Trial

If the Purchasing Agent requests or accepts a sample for test and trial, he places himself under the obligation of making a fair trial, promptly, and reporting to the

PRINCIPLES AND STANDARDS OF PURCHASING PRACTICE

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adopted by the National Association of Purchasing Agents

- 1. To consider, first, the interests of his company in all transactions and to carry out and and believe in its established policies.
- 2. To be receptive to competent counsel from his colleagues and to be guided by such counsel without impairing the dignity and responsibility of his office.
- To buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.
- 4. To strive consistently for knowledge of the materials and processes of manufacture, and to establish practical methods for the conduct of his office.
- 5. To subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery.
- To accord a prompt and courteous reception, so far as conditions will permit, to all who call on a legitimate business mission.
- To respect his obligations and to require that obligations to him and to his concern be respected, consistent with good business practice.
- 8. To avoid sharp practice.
- 9. To counsel and assist fellow Purchasing Agents in the performance of their duties, whenever occasion permits.
- To cooperate with all organizations and individuals engaged in activities designed to enhance the development and standing of purchasing.

supplier on the results of the trial or the decisions reached therefrom. The subterfuge of requesting samples merely as a means of terminating a solicitation, with no intention of considering the material for purchase, is particularly to be condemned, both as a wasteful practice and unfair to the prospective seller. Some companies make it a rule to handle all samples on a trial order basis, paying for the material, regardless of how small the amount involved may be. This gives the company a tangible interest in seeing that the test is fairly made, looking toward possible advantages accruing from the use or adoption of the new material. At the same time it relieves the company from any obligation to the seller beyond the actual purchase involved in the order. It may be the part of courtesy to make a report to the seller, but there is no compulsion, express or implied, to make an explanation.

Misrepresentation

One of the most reprehensible practices in a negotiation is to give a false impression of the quantities to be purchased or the conditions of delivery, and to enter into a contract with the seller when there has been no real "meeting of minde" in respect to these basic considerations, even though the contract or order may be signed and accepted in due legal form. Evidence of

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fraud or misrepresentation, of course, can void the contract, and prudent vendors take care to cite specific quantities in their price lists and quotations when quantity is a determining factor of price. Still there are complaints on this score, and while many of them can be explained away as misunderstandings rather than misrepresentation, they could and should have been avoided by making sure that no such basis for misunderstanding exists, either through what is said or what is left unsaid. Casual reference to annual requirements, without going on to explain that the business is split three or a dozen ways, or that the delivery releases will be given in excessively small quantities for a score or more of scattered delivery points, is one of the simpler cases. The hapless seller who hasn't explored and hedged every possible contingency may be bound by his contract. But for the buyer it is strictly a one-time price advantage. The only permanent effect that he can count on is an unsavory reputation for himself and for his company.

It is quite possible for a comparable situation to develop quite innocently and in all good faith. Preliminary conversations have been based on an apparent or anticipated requirement of, say, 20,000 units, and a price is quoted per piece or per thousand with no reference to quantities, though the assumption is that the quantity will be somewhere in that neighborhood. When the time comes to place the order, the quotation is accepted, but the program has been changed and the requirement has shrunk to 2,000 units. This may be an embarrassing and unfortunate situation for both the buyer and the seller. The latter has based his estimate on a larger production volume, and has perhaps spread certain initial costs over the greater number of unts. Meanwhile, in the buyer's company, costs have been based on the quotation as received. With no element of fraud in the negotiation, the contract obligation governs, and the responsibility or loss falls upon the party exercising the least foresight and care in protecting his company's interests in the matter of estimates and terms.

Put It in Writing

A contract form does not settle any ethical issues, but by defining responsibilities according to a code of equity it takes a lot of potential controversies out of the debatable realm of ethics and simplifies the issue to the point of living up to one's contract obligations. That in itself is a practical gain. It will not make a business man or firm more honest, but it keeps conduct within certain recognized bounds. With reasonable care and prudence on both sides in drawing up a contract and in reading what is signed by purchasing and sales representatives before those signatures are affixed, a good deal of trouble and misunderstanding can be avoided. It is good ethical practice—as well as good law and good psychology—to "put it in writing."

The question sometimes arises as to whether the buyer's or the seller's order form shall be used. That question is posed on the assumption that the buyer's form has naturally been written from the viewpoint of protecting his company's interests as buyer, just as the sales form or contract has been written from the seller's angle. Since mutuality of interest must be the basis of a contract agreement, every company has an easy test by which to determine the fairness of the respective forms: Would the Purchasing Agent be willing to buy on his company's own sales order form, and would the Sales Manager be willing to accept the terms of his own company's purchase order? If all companies were to set up such a standard, the question of which form to use becomes academic.

For the ordinary run of purchases in industrial buying, orderly business procedure is best served by the regular use of the buyer's purchase order, and this is quite generally recognized by sellers in the industrial field. Selling to householders, small retailers, and others where no organized purchasing department exists and no open accounts are maintained, is an entirely different situation.) There are some types of purchases, however. where special conditions are encountered which are not covered by standard clauses and which should be defined in the agreement. For example, purchases of equipment involve details of installation, work done by seller's employees upon the buyer's property, etc.; and some types of materials have a special vocabulary, measurement of value, or other factors affecting the language and the terms of the contract. In such cases, the seller's standard form is usually best adapted to the The ideal situation, when this condition exists, is the preparation of a standard contract form by joint action of representative buyers and sellers concerned with the product, acting for their respective trade or professional organizations, and arriving at a form of agreement that is mutually acceptable, to be endorsed as a general standard for industrial sales and purchases in that field. The National Association of Purchasing Agents has successfully collaborated in this way with the National Coal Association and with the Rolling Mill Machinery and Equipment Association, and the resulting contract forms have been used with mutual satisfaction over a period of several years.

Too Many Clauses

Much criticism has been directed, and properly so, against the myriad terms and conditions incorporated in some purchase order forms, covering the entire back of the sheet with paragraphs of small type running up to thirty or more special conditions applying to the order. The contrast is particularly striking when such a form is placed beside another, apparently equally satisfactory to its users, where the entire "terms and conditions" are embraced in two or three lines on the face of the order. Sometimes these clauses emanate from an over-zealous legal department. Sometimes they have had their origin in unfortunate experiences which are to be avoided in future transactions. If they are reasonable, simply restating in specific language the recognized principles or customs of the trade, there is probably no reason for objection other than the difficult but nevertheless necessary) chore of reading through them before signing. By the same reasoning, in dealings between reputable and responsible business concerns, many of them may be superfluous.

The danger of writing lengthy and elaborate conditions into an order or contract is that they may go too far as a protective mechanism. Aside from the understandable reluctance of the party of the second part to accede to these conditions without the most careful scrutiny, which adds to the difficulty of buying and selling, there is the legal consideration that a lack of mutuality in accepting responsibility under an agreement-even though it may be duly signed-may result in making the entire contract illusory and unenforceable in law. The recently popular "hold harmless" clauses are a case in point. The cancellation clauses in current war contracts present another fertile field for controversy, though it is necessary in these special circumstances to foresee and prepare for this eventuality and it is perfectly possible to draft a fair clause to cover the situation. In this sellers' market, some industries have drawn up their own sets of terms and conditions, returned with each acknowledgment, and the acceptance

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of an order is conditioned on this code; the buyer who wants to get delivery is forced to accept this modification of his standard order form.

Reasonable Contracts

The essence of a contract is mutuality—fairness in its demands and in the division of responsibility, and understanding and acquiescence by both parties. Simplicity is an aid to this end. A highly commendable clause is that which states that special clauses shall not be construed as relieving the seller or the buyer of any responsibilities normally incurred by sellers and buyers in the ordinary conduct of business. Contract law covers most of the situations which will be encountered, and well established trade customs—though not of binding legal force—have been recognized in courts of law as governing transactions in their respective fields.

As pointed out in an earlier section, it is the buyer's duty to secure for his company every legitimate advantage in purchasing, to insist upon the prerogatives of the purchaser in each transaction, and to see that vendors live up to the obligations of their contract. On the latter point, it is self-evident that this becomes possible only as the demands of the contract are practicable of fulfillment. Insistence on unreasonably quick deliveries is one shortcoming that could be overcome, in most instances, by greater foresight and consideration in buying. Frequently the vendor actually "accomplishes the impossible"—probably at the expense of service to some other customer or by incurring overtime payments not contemplated in his price. But when such super-service is demanded on many orders, something is wrong with the system or with the mental attitude in the purchasing department.

The most successful purchasing program is based upon a knowledge of what can reasonably be expected of the supplier, and this is the strongest argument in insisting upon adequate and reliable service. For reasonable demands discourage "alibis" and excuses at the outset, and take away the necessity for relaxing any part of that service to which the buyer is entitled. That same reasonableness, by the way, should prevail throughout the relationship—to adjustments, for example. Far from implying any softness or sacrifice, it is a potent way of strenthening the buyer's position and insuring a high degree of vendor cooperation and performance in the purchasing program as a whole, and particularly in those unavoidable emergency situations when it is most needed.

Who Earns the Order?

One of the moot questions involving purchasing ethics is the determination of which vendor, among several competing for an order, is "entitled" to the award. Purchasing is basically a matter of judgment, which remains pretty much of a personal factor even with the advance of scientific methods of analysis and procurement. In governmental buying, there is almost universally a statutory provision that the business must be awarded to the lowest responsible bidder, and responsibility may be defined as the ability to give a performance bond. This would seem to settle the ethical problem and remove the transaction from the realm of judgment to a very great extent. But immediately there arises the not uncommon situation of identical bids from two or more potential suppliers-circumstantial evidence, by the way, of dubious selling ethics. Under such circumstances, a common procedure is to draw lots, which is neither scientific

nor based on any ethical concept. In buying for private industry, such a solution is not necessarily regarded as good practice, for sound purchasing judgment frequently dictates the selection of a bid other than the one which happens to be the lowest in dollars and cents.

Recent legislation has also outlawed discrimination—aimed at the seller, to be sure, but making the buyer equally culpable for accepting bids which may be illegally discriminatory in his favor. The direction of such thinking and legislation is to give all concerns, particularly "small business", an equal opportunity in buying and selling. Its practical effect has been, in some cases, to set legal standards for the selection of suppliers.

Prejudice in Buying

Purchasing Agents, in their Code of Principles and Standards, approach this question on the ethical plane—"To buy without prejudice." The clause then goes on, in the best tradition of practical folk-wisdom to show that ethical conduct pays, by adding—"seeking to obtain the maximum ultimate value for each dollar of expenditure." In other words, even if you don't happen to like a salesman's mannerisms or neckties, don't overlook the fact that he may still have the most favorable proposition for your company.

The word "prejudice" has acquired a negative and unsavory connotation. We are too apt to jump to the conclusion that it means prejudice against a particular person or company or idea, and such a mental attitude, as indicated in the preceding paragraph, is not conducive to good purchasing. But prejudice also has a positive meaning. A good part of all selling effort is devoted to prejudicing the buyer in favor of a particular company and its product, and there is nothing even remotely unethical about this, either as a sales or purchasing policy.

It is helpful, in clarifying this point, to break the word down into its component parts. Judgment is a prime essential of good purchasing, and good judgment generally leads to a decision that is both wise and ethical. But pre-judgment, in the sense of closing one's mind to facts and considerations that might modify or change a previous opinion, is the thing to be avoided. The open mind, receptive to new ideas, giving consideration to new sources, and overlooking irrelevant or superficial details (including personalities), as the basis for purchasing judgment, is one of the most potent characteristics of the successful buyer. The open mind makes for constructive and efficient purchasing, for high ethical standards, and at the same time it accomplishes in practical terms what ponderous legislation has attempted to establish in law—equality of business opportunity, based on merit.

Special Services

No one is more keenly aware than the Purchasing Agent that business is earned on other grounds than a low quotation. There is the common instance where a supplier has contributed valuable—and expensive—preliminary development and engineering services to make a product possible and to evolve a design or formula best adapted to the buyer's need. The cost of that development work is presumably included in the quotation, for it is a cost that he should legitimately recoup, and is in fact under the economic necessity of doing so. It is not a matter for special charges, for he is not in the business of consulting engineering except as a means of making sales for his product. The service is, in all likelihood, not of a sort that can be protected by basic or design patent, but it gives him an edge in the competition and he views it with proprietary air.

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On the strength of his service, he secures the original order.

Now the question arises to what extent the buyer is bound by this service. Is he justified in sending out the drawings or a sample part for open competition, putting the superior engineering skill of the original supplier at the disposal of his less skilled competitors? Or is it his obligation to accept a tacitly monopolistic condition and continue to pay what amounts to a design royalty on all future orders? It is unlikely that there will ever be a completely satisfactory answer to this question. Purchasing ethics recognize a compromise position as probably offering the fairest solution to both partiesa liberal term contract, covering requirements for a year or more to reimburse development expenses, and then competition with favorable-if not actually preferential—consideration for the original supplier. Suppliers will continue to resent even such an arrangement, but will presumably continue to console themselves with the realization that their ingenuity and skill secured an original order that would otherwise have gone to some one else, and that they have a substantial competitive advantage in manufacturing experience, and perhaps in patterns and dies as well, for future orders. Their own basic contention that they are in business to produce the part, and not to sell engineering advice, argues against the perpetuation of an arrangement depending on the latter factor.

Loyalty to Suppliers

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Purchasing Agents look for loyalty from their suppliers. It has been strikingly demonstrated in the wartime period of material and product scarcities that successful procurement depends upon having sources which can be relied on to "take care of" their regular customers in acceptance and delivery of orders, sometimes at the expense of sacrificing temporary business that might have proved more profitable. And even in normal times, beyond the mere fulfillment of contract obligations, they look to the salesman and his house to keep them apprised of market conditions and developments that might affect their purchasing, and to accord them at least equitable treatment in their own competitive field. That expectation imposes a corresponding obligation of loyalty on the buyer's part.

The extraordinary sales efforts to "break into" a new

The extraordinary sales efforts to "break into" a new account, and the relatively low turnover in most companies' list of suppliers, are evidence that most buyers practise loyalty to their supply sources. The common procedure of maintaining a limited list of approved sources for regular items of purchase is the practical

means of carrying out such a policy.

There is nothing unethical about taking advantage of a job lot or special offer, but most established purchasing departments are not particularly interested. There are opportunists, of course, but in a continuing operation the Purchasing Agent is looking for continuing or repetitive advantages rather than in the one-time opportunity, especially when the latter may result in sacrificing some of the advantages of the long range program.

As in the case of other ethical considerations, there is a practical side to such decisions. Purchasing seeks uniformity of product and dependability of supply, and the good will which expresses itself in high standards of service. It also recognizes that invoice price is not the sole measure of ultimate cost; that constant readjustment of shop processes to accommodate variations in quality, unpredictable results, lack of uniformity in their own product, and lowered shop morale, are all important contributing factors. It costs money to develop sources

of supply and to educate them in regard to the company's requirements. Just as low turnover among the employees is indicative of a sound labor-relations policy, so a low turnover rate among suppliers is indicative of a sound and satisfactory purchasing program.

Conserving Effort

Mention has been made in an earlier section of the Purchasing Agent's responsibility in conserving the time of suppliers' salesmen. There is a corresponding responsibility to conserve effort and to avoid the useless expenditure of time and effort involved in calling for an excessive number of bids on a proposed purchase. The preparation of an estimate and quotation represents a considerable expense to the seller—the outlay of time and effort by personnel in the higher brackets as well as the clerical work involved, and may go so far as to require engineering research and drawings before the bid can be calculated. That expense is multiplied in direct ratio to the number of potential suppliers who are invited to quote—and only one of them will receive the order.

While it is true that sellers, in normal times, are constantly clamoring for an opportunity to quote, even citing ethical grounds for demanding this privilege as a right, the latter reasoning is not altogether sound. It has been accepted only in governmental buying, and there chiefly for reasons of public policy in a field that is peculiarly vulnerable to undiscriminating criticism.

It has been convincingly demonstrated in purchasing for private industry that the competitive element in buying is amply served by inviting a limited number of quotations from well-qualified bidders—specifically from those who are included on the Purchasing Agent's approved list. It is certainly unethical, as well as unpardonably wasteful, to ask a firm to quote when there is no intention of awarding them the order even in the event of a favorable bid. And needless to say, the use of excessively long lists in the expectation that, sooner or later, some one will make an error and quote too low, belongs to the Dark Ages of purchasing and would be tolerated by no reputable firm or its purchasing officer today.

Responsibility for Profits

The latter point raises the question of the extent to which the buyer is morally responsible for the adequacy of the seller's accepted bid, and obligated to assure him against loss in the transaction. There is no legal responsibility if the buyer's invitation has been complete and explicit as to the requirement, and if the seller's quotation has been offered and accepted in good faith. There is a practical aspect, however, in the fact that no purchasing transaction is wholly satisfactory unless it is mutually satisfactory and profitable, and no continuing buyer/seller relationship can be developed on any other basis.

Purchasing Agents' knowledge of costs and markets—reinforced by comparative quotations—generally indicate pretty clearly which suppliers may be "out of line" in quoting either too high or too low, and both these conditions are open to suspicion and inquiry. An excessively low bid, without a valid reason to make it possible without sacrifice of reliability, is one of the well-accepted reasons for awarding business to other

than the low bidder.

But mere divergence of bids is no sure indication of error. A very discerning decision of the Comptroller General of the United States points out that, especially when the number of bids is small, there is no more reason to assume that the low bid is too low than that

the high bid is too high. It is distinctly a responsibility of the seller to see that his quotation is in order.

Errors in Bidding

If the bid is obviously wrong, it should be thrown out or questioned. If there is a strong suspicion of error, the seller should be given the opportunity to recalculate his bid, with the privilege of revising or withdrawing it. It may not be the part of wisdom to suggest that a higher figure is in order, for there may be a perfectly logical reason for the low quotation. There are many instances in which the original bid has been reaffirmed (or even lowered!). On the other hand, the Purchasing Agent wants assurance on this point to safeguard performance, and no reputable firm would wish to take advantage of such an error.

Cases will occasionally arise when a substantial error has been made in the estimate—a whole cost item or operation inadvertently omitted in the calculation—and the error is not discovered until the contract is signed and the work in process. Under such circumstances, and in spite of the average business man's deep seated aversion to renegotiation, the seller may be impelled to plead for relief. Legally, the responsibility is clearly the seller's own, and the penalty is also his—whether he takes the loss in living up to the contract or becomes liable for damages through non-performance.

It may be expedient in some cases to make an adjustment, but that is not necessarily evidence of high ethical conduct on the buyer's part toward the particular supplier. For even beyond the fundamental principle of the sanctity of contracts, he has a responsibility to the other, unsuccessful bidders. For instance, if the price were adjusted to the level of the next higher bid—and this would certainly be a limiting factor regardless of other costs considerations involved—the transaction would still not be wholly fair to the second bidder, who would otherwise have received the award and who would presumably have made a profit in fulfilling the contract at his own quoted price.

Use of Purchasing Power

One of the elements of good purchasing is to make fullest utilization of his company's purchasing power. Ruthlessly interpreted, in buying for a company large in size and dominant in its position, and when dealing with smaller and less strategically situated suppliers, this principle might constitute a serious threat to the vendor's interests and profits. That would be the abuse, and not the use, of a perfectly proper advantage. But since the contract is a mutual agreement and the seller knows, or should know, how far he can go in the matter of costs and prices, he is under no compulsion to submit to such pressure.

Unfortunately, there is little actual evidence on the point. The crying towel has been produced so often on both sides of purchase/sales negotiations, and so saturated with hypocritical tears, that the protestations should be discounted rather liberally. There are instances, of course, when a manufacturer may be desperately hungry for business, or in need of ready cash. It isn't a good sales argument, and it makes him particularly vulnerable to pressure in negotiating. But to press that advantage unduly is like hitting a man when he is

down. Business ethics should be on at least as high a plane as those of the prize ring.

There are instances when sales policy or sales strategy elects to sacrifice normal profits to gain some special advantage. Such cases include introductory or "break in" prices, loss leader lines, and a variety of special inducements. We are not concerned here with the economics or ethics of such practices in respect to competitive marketing. But unsound marketing generally results in unsound purchasing, and the buyer should be on his guard. Price wars, somewhat illogically, may be initiated to maintain or raise prices, but it is quite possible that their immediate objective is to put a competitive supplier out of business. And it should be pointed out, too, that the acceptance of such special offers by a purchaser can not be construed as imposing on him any ethical obligation to continue patronizing that seller with future business. It is very doubtful whether any permanent advantage would accrue to him by doing so, for it requires only the most elementary accounting to know that the seller's sacrifices on such transactions are to be recouped on subsequent orders or on incidental business resulting from the special order.

Help Make Suppliers Strong

The Purchasing Agent for a very large and well known company has made the interesting suggestion that business ethics would be on a higher plane, and that many of the real or fancied inequities of present practice could be avoided if, as a general policy, companies would try to confine their dealings to concerns enjoying a comparable position in their respective supplier industries—a sort of major and minor league arrangement in business, whereby competition would be equalized and stresses lessened, with the opportunity still present to move up into a higher bracket when qualified by growth and experience. Unfortunately, again, there is no evidence that the plan has been tried. much less that it is a practicable suggestion or that its results would be as predicted. If this particular purchasing executive were to carry out such a policy literally, there would be many a disappointed vendor among the little fellows who depend upon his company for a substantial part of their own business, and are apparently holding their own in the process. It is probably true that, on a quality rather than a size basis, such a policy does prevail.

More practicable, and in a sense approaching a comparable result, is the consistent effort of far-sighted purchasing departments not only to deal with strong suppliers, but to help make and keep their suppliers strong. This is not as Quixotic or altruistic as it might seem, for the backbone of any procurement program is its strong and reliable sources of supply. Such a policy merely recognizes the mutual interest and interdependence characteristic of all good business. There are dozens of instances where, with engineering and management advice from an important customer, backed by a substantial and steady flow of business, secondary manufacturers have been able to attain new peaks of production efficiency and economy, to their own lasting advantage as well as that of the interested customer. A decent concern for the welfare of the supplier is not only good ethics but good business.

Next Month: Purchasing Department Reports

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TRUMPETS AND TRAPS

Team work is the factor that makes a good band, or a good business — or a good government

By

CHARLES FORD

BACK in the gay '90s, one of our comedians used to sing a song, the refrain of which was:

"You can't play every instrument in the band."

Ain't it the truth?

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In that headquarters for headquarters, New York, there used to be a big industrial with factories in a dozen states. This outfit had a Director of Manufacturing who took pride in occupying a whole floor of their big building with an aggregation of performing seals. He would assemble squads of seals, read them a lecture to demonstrate to them, beyond doubt, that the blackboard hoisted up in front of them was white. The seals would nod their heads and agree: what were they there for? Then, when they agreed, the Director of Manufacturing would call them naughty names for being such damned fools.

The function of most of these trained performing seals was to write letters to the factories: directives, our alphabetical Ashantees in Washington would call them. The trifling fact that these directives conflicted with one another and with common sense, and set the local managers by the ears meant nothing in their young lives. To hell with that. They were there to

manage these factories by remote control, and by heck, they were going to do it. When they told them fellers that the blackboard was white, that went.

Directives or Results?

But, one fine day, somebody in authority discovered that the Director of Manufacturing had only four cards in his flush. The factories weren't functioning, and the local managers were staging a whisky rebellion that wasn't any joke. The production was lousy, what there was of it; and the trained seals were trained eels when it came to assuming responsibility.

The Director of Manufacturing was directed out; and there entered a new Director of Manufacturing.

This one didn't make much conversation and didn't want to listen to it. He didn't need to be told. He went over that well-populated floor with a fine-tooth comb, even to the fleas on the seals. Out of the hundred-odd making up the herd, he picked out about ten who seemed to have something under their hats

besides hair, and fired the rest. Then he issued just one directive: he told the factory managers they were to run their factories and be responsible for the product. The communications they would get from headquarters would be few, but they would mean business. If a local manager didn't have time to shave before he got to the office, that was his business and New York didn't give a damn. If he took the afternoon off for a ball game, that was his business, provided that the factory produced, according to its orders, volume and quality. If the factory didn't produce, heraus mit

After that, only promotion or death removed a factory manager.

The Democratic Way

It all gets back to the human equation. If the boss picks his men, lays down a general policy and trusts them to make good, they generally do make good; and the boss doesn't have to interrupt his spring fishing to convince a herd of performing seals that black is white.

Maybe you've heard there's a war on. We are fighting some tribes whose big chiefs have trained their peoples in the idea that they them-

(Continued on page 290)

NE of the most vexing problems confronting wartime purchasing authorities is positive purchase order control from the moment a requisition is placed and the Purchase Order issued, until the last nut or bolt is delivered by the vendor, the last shipment moved from the Receiving Room, through the Inspection Department, to its proper bin in the Storeroom, and the last invoice passed for payment. Production is becoming more and more dependent upon Purchasing for this "follow-through" type of cooperation that will prevent unnecessary manufacturing delays caused, not only by raw material and purchased part shortages, but by acceptance of goods not up to standard, substitutions without authority, and by inside delays, caused by slow or inefficient receiving and inspection routines.

In the old days these unfortunate occurrences were less likely to happen, and a delay of a day or even a week was relatively unimportant. But, in wartime, with material

LESS WORK and FEWER ERRORS

By

F. W. SWADENER

shortages, partial shipments and many other headaches, lack of an adequate system for complete purchase order control, from start to finish, which will permit Material Control to function properly, can mean the difference between efficient planning, and something approaching a state of utter confusion.

A Paper Work Problem

An order control system is essentially a means of providing ALL interested parties with ALL information needed, WHEN it is needed. Since information of any kind is best transmitted in writing. the order control problem becomes a paper work problem. The question - a matter of who needs to know what and when. The objective — a matter of combining operations, simplifying procedures and eliminating wasteful delays caused by unnecessary writing and re-writing of identical information. Practically all purchasing departments have some form of order control. The information needed usually gets to the individual concerned eventually but almost invariably, if rewritings are required, it is delayed. ste

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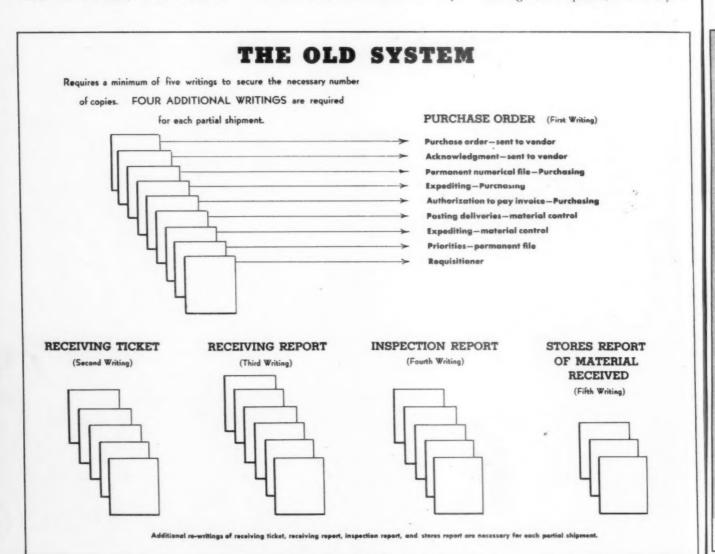
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Making out purchase orders from a mimeograph stencil provides, in one operation, as many copies as may be needed for a completely correlated system of purchasing, receiving, inspection, and material control with the assurance that all copies are identical

One writing takes the place of five or more

It is not at all unusual to find purchasing departments using from ten to twenty forms with varying numbers of carbon copies, and with as many as three or more of these forms tied in directly with the Purchase Order itself. Usually some of these related forms must be rewritten because information identical with that covered by the Purchase Order is required.

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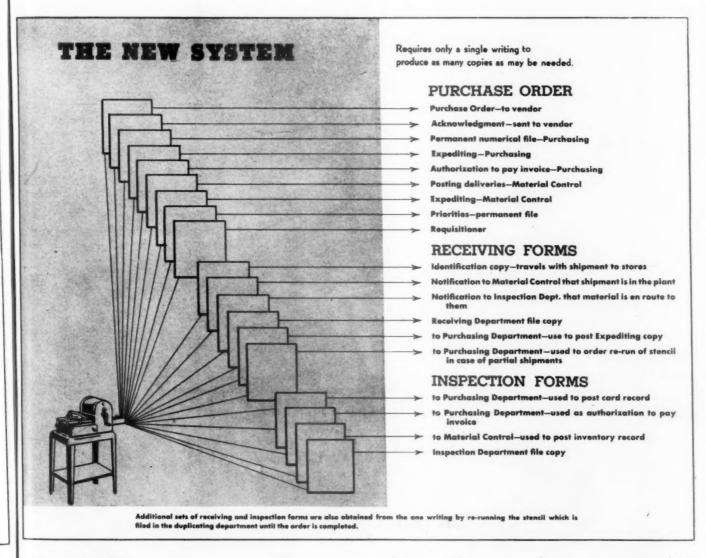
One Writing for Five

In the case of one manufacturer of metal parts, the Purchase Order, Receiving and Inspection routines required writing of a minimum of five sets of forms. The writing, in each case, covered all or a part of the identical information given on the original Purchase Order. These five forms were: the Purchase Order (nine copies), the Receiving Ticket (five copies), Receiving Department Report of Material Received (six copies), Inspection Report (five copies) and Stores Report of Material Received (three copies). In the case of partial shipments ALL of these forms, with the exception of the Purchase Order, were re-written for each partial shipment.

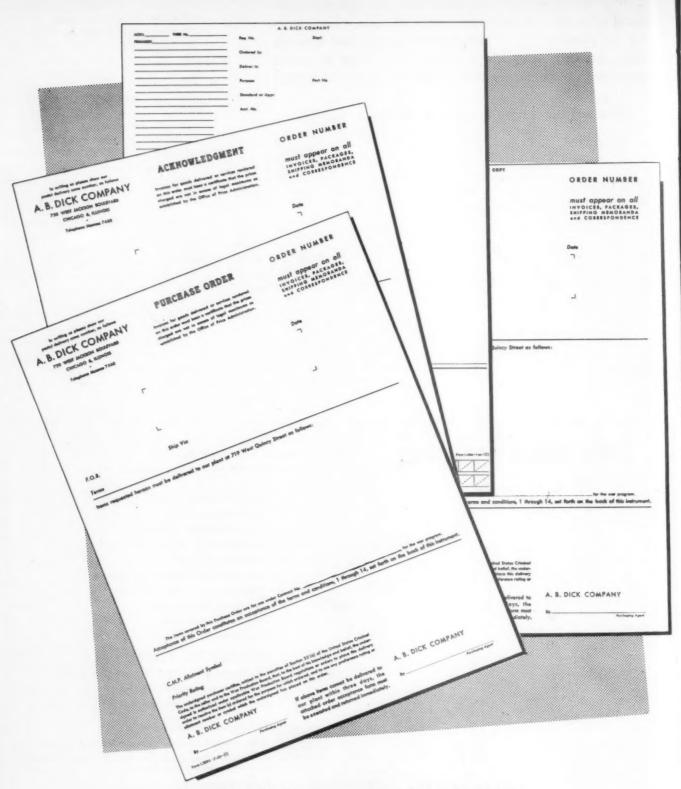
Using the extremely conservative estimate of an average of three shipments per Purchase Order, the re-writing reaches the total of thirteen. When partial shipments run as high as fifty or one hundred per order, the number of re-writings goes extremely high. Add the possibility of error, which increases by four for each partial shipment, to the cost and delays caused by the need for re-writing, and the problem becomes one of sufficient importance to demand careful consideration.

Since the solution is, to a great extent, a matter of combining operations, simplifying procedures and avoiding wasteful delays caused by unnecessary re-writing, the actual production of the paper work will depend somewhat upon the process of duplication which is employed. Stencil duplication should be given consideration because of the number of advantages it offers:

 Of primary importance is the fact that as few or as many copies as may be needed can be produced



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The various copies of the purchase order are functionally designed so that in addition to carrying the mimeographed information, each copy serves its specific purpose in the routine and record.

The priorities data appears on the original (to the vendor) and on a priority file copy for permanent record, terms and conditions of the order are printed on the back of these two copies.

The acknowledgment copy utilizes this space for a detailed promise of shipment, and the follow-up copy translates this information into terms of an expediting schedule.

A record of shipments received is entered on the back of the purchasing department's working copy and on the material control (inventory) copy.

Working copies for the purchasing, requisitioning, and material control departments are punched for standard binders.

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from a single writing on a stencil sheet. (This includes all Receiving and Inspection forms regardless of the number of partial shipments.)

2. Control can be assured by having the stencil sheets die impressed with serial numbers to identify all copies duplicated from each stencil.

The stencil may be filed and additional copies re-run if additional copies are needed.

4. All copies are highly legible because they are permanent black

on white.

5. The possibility of error which occurs through re-writing is eliminated.

6. Valuable time, and money, are saved by the elimination of rewriting.

As a practical example of what can be done in the way of streamlining and combining purchasingreceiving-inspecting routines to eliminate re-writing and speed up transmission of information, let us take the case of the manufacturer of metal parts mentioned above.

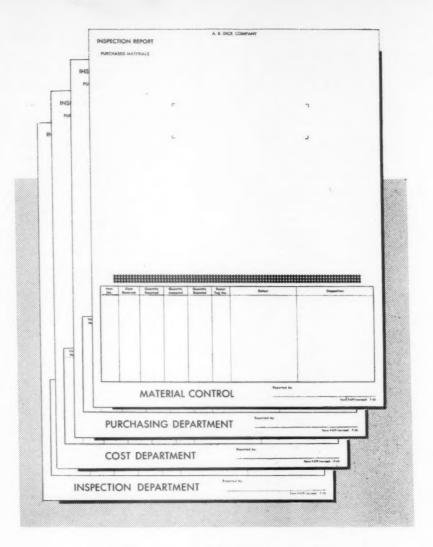
When the single-writing method, utilizing stencil duplicating was substituted for the old method of writing the Purchase Order and rewriting individually the four related forms for each delivery, the following routine was established:

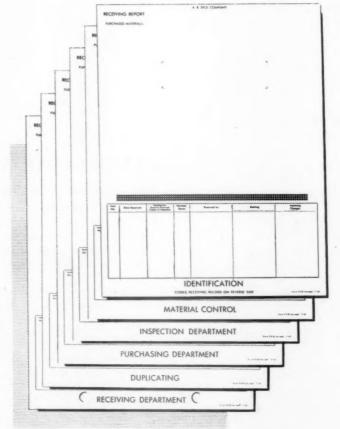
The Purchase Order is typed on a form-topped* stencil sheet which has the order number die-im-pressed** in it. The stencil is then

*Form-topped stencil sheets are regular stencil sheets furnished with a facsimile of your printed form already placed on the stencil sheet surface. The facsimile is a typing guide for positioning the copy so that the duplicated copy will fit and register into the form.

**Die-impressed stencil sheets are regular stencil sheets partially prepared by die impressing. The use of stencil sheets die impressed with serial numbers assures control by the use of the order number to identify all copies duplicated from each stencil.

The sets of copies used for inspec-tion and receiving reports are backed with one-time carbon so that in making these entries the principle of making only a single writing is observed and errors of transcription are eliminated.





sent to the Duplicating Department where nineteen copies are duplicated - one set of nine of the Purchase Order, one set of six of the Receiving Report, and one set of four of the Inspection Report. The stencil is then filed in the Duplicating Department, numerically by order number, so it will be ready for any necessary re-runs. The nine copies of the Purchase Order are sent to the Purchasing Department, the 6 copies of the Receiving Report go directly to the Receiving Department and the four copies of the Inspection Report go to the Inspection Department.

Purchase Order Copies

The Purchasing Department distributes the nine copies of the Purchase Order as follows:

Two copies (Purchase Order and Acknowledgment) to the Vendor.

Three copies are retained by the Purchasing Department, one for their permanent numerical file, one for Expediting, and one to authorize payment of the invoice when received.

Two copies go to Material Control, one is used to post deliveries as received, then filed in their permanent file and the other is used for expediting and follow-up.

One copy goes to Priorities for permanent filing in accordance with Government regulations.

One copy to the Requisitioner as notification that the order has been placed.

Receiving Reports

The Receiving Report set, which is sent directly to the Receiving Department, consists of six copies, four of which are carbon backed to permit pencil extensions by the Receiving Department when the merchandise is received. These six copies are distributed as follows:

The Identification copy travels with the material until it reaches stock and Stores. When it reaches this destination an entry is made on a special form printed on the back of this copy and the copy is then sent to Material Control.

One copy goes directly to Material Control to advise them immediately that the merchandise is in the plant.

One copy goes to the Inspection Department to advise them that the merchandise is en route to the Inspection Department.

One copy is retained by the Receiving Department and filed by month and by name of vendor.

Two copies to the Purchasing Department, one of which is used to post the Expediting Copy of the Purchase Order, and the other used as an order to the Duplicating Department for re-run of another set of Receiving and Inspection forms if the order is not complete. (If the order is complete, this copy is stamped "Destroy Stencil" to clear the files of the Duplicating Department.)

Inspection Record

The Inspection set which is delivered by the Duplicating Department to the Inspection Department is used as follows: when the material is received and the necessary inspections are made, pencil extensions indicating definite disposition are made on the inspection forms. (These forms, like the Receiving Forms, are carbon backed to permit quick pencil extensions.) Immediately upon completion of the inspection, the report is made out and the copies distributed as follows:

Two copies to the Purchasing Department — one for posting their card record and one for authorization to pay vendor's invoice.

One copy to Material Control for posting their perpetual inventory record

One copy retained by the Inspection Department for their record.

In the case of partial shipments, the same routine is followed. The Inspection Report informs Purchasing that the order is not complete—Purchasing orders one set of each of Receiving and Inspection forms from the Duplicating Department—the forms are run from the stencil which is on file—delivered to Receiving and Inspection and are ready for use when the next shipment comes in. In this manner, complete sets of Receiving and Inspection forms are furnished automatically for each shipment until the order is complete.

A Single Routine

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The essential difference between this system and the old way of handling the same work is that the five operations which were previously handled semi-independently separately are now combined in one free-flowing routine which gives positive order control from the initial writing of the order to delivery of the last item. Aside from the obvious gain of the automatic and immediate transmission of all information needed to all parties concerned, this system has the highly important advantage of making it possible to produce all purchase order data (including any writing made necessary by partial ship-ments) from a single writing, thus avoiding the serious and time-consuming delays which can be caused by such common errors of writing as the transposition of purchase order numbers and part numbers. This system can easily be adapted to the purchase-receiving-inspection requirements of practically any type of organization and is well worth consideration by purchasing author-

REPLACING LOST CONTROLLED MATERIAL

Direction 16 to CMP Reg. No. 1 Governs— Replacement Order Takes Preference

In cases where controlled material is lost or stolen in transit, it must be replaced by the person with whom the order for it was placed, without requiring a new allotment, the War Production Board announces.

This ruling, contained in Direction No. 28 to CMP Regulation No. 1, indicates that the replacement order should be treated by a producer in the same way a replacement order for defective controlled material is treated under the terms of Direction No. 16 to CMP Regulation No. 1. Generally, this means that the replacement order takes preference over all other orders.

Warehouses must give a replacement order, according to Direction No. 28, preference over all other orders, in the absence of specific instructions to the contrary. However, if a warehouse is unable to fill a replacement order immediately, the customer may, if he desires, and without further charge to his allotment account, cancel the order with the warehouse and place a new authorized controlled material order with another warehouse which can make delivery immediately.

The direction does not affect the rights or liabilities of anyone with respect to lost or stolen material.

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GRESWOLD VAN DYKE

Manager, Special Steels Dept. Joseph T. Ryerson & Son, Inc.

P OR many years, steel users have been endeavoring to specify alloy steels on ever narrowing analysis ranges. Steel producers have constantly improved their manufacturing methods in an effort to meet this demand. In all probability, however, it would be very difficult to operate, on a commercially sound basis, and produce composition ranges more narrow than those in use today.

The performance of steel is governed in the main by its analysis. Performance may be defined as the behavior of steel in relation to machinability, response to heat treatment, required physicals, and other characteristics. Uniformity of performance is a desirable characteristic of any industrially used product. Therefore, the specifying of close analysis control has as its objective the procurement of steel which will be uniform in performance.

Performance Is the Aim

The control of steel performance by the analysis method is difficult, because all elements entering into the composition of steel have a plus or minus effect on its performance and therefore, such control involves the accurate manipulation of all these elements by the steelmaker.

In standard steel analysis specifications, some elements are controlled by top limits, such as phosphorus and sulphur, and other elements are controlled by both top and bottom limits, such as carbon. manganese, silicon, nickel, chrome, molybdenum, etc. This means that the steelmaker's first consideration is to produce steel which is within the chemical limits. Under such a condition he cannot be also confined by a performance specification because the purchaser of the steel has taken upon himself the responsibility of performance, provided that the steelmaker meets the chemical analysis which he has demanded.

If the steel producer knew the performance requirements of an application and was told the type of steel preferred, then he could work to the performance requirements of



PURCHASING STEEL on Performance Basis

Steelmakers need greater leeway of chemical analysis under today's conditions, but have developed means of close control over basic performance characteristics

New specification and ordering practice is recommended

the customer, provided that he was given reasonably wide leeway in chemical analysis.

Low Alloy Steels

The scarcity of alloying elements caused by war conditions rendered necessary the development of entirely new low alloy content steels to take the place of steels previously used which contained high percentages of alloys.

There was not sufficient time to check these steels by commercial use and therefore a method had to be adopted to evaluate their performance ability by a test that could be quickly and accurately made. This problem was solved by the use of the Jominy End Quench Hardenability Test, which has been applied in a sufficient number of cases to indicate its reliability in predicting how the steel would perform in standard or commercial applications.

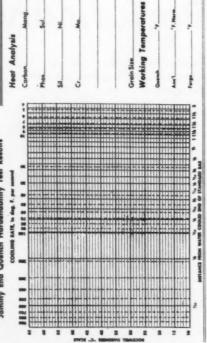
The work done along these lines in connection with the National Emergency (N.E.) Steels has started the idea of specifying steels on a performance basis rather than on a chemical analysis basis, and the purpose of this article is to cover some of the high points of this sub-

RYERSON ALLOY STEEL REPORT

(For Jaminy Test interpretation see reverse side)

This report contains the analysis submitted by the mill, for the hear of sheel used to fill your deads. The Jewey's Test and delystical property interpretations are made in the Ayerson Laboratory. This dense is subject to normal varieties in the regarding, etc. it is offered as a guide for hear treating this size to be the controvings, but it is may not be used as a basis for reserving this controvings, but it may not be used as a basis for reserving the claims. Be seen that the heart symbol on this sheet corresponds with that stampted or tegged on the alley steel delivered to you.

Jominy End Quench Hardenability Test Results



Physical Properties as Interpreted from Jominy Tests

In Strength Vield Point In 3 Inches

RYERSON Cartified STEELS STEELS

JOSEPH T. RYERSON & SON, INC., PLANTE AT CHICAGO OFFICE CHICAGO BOTTON PERSON PARTY OF THE PROPERTY OF THE PRO

DENTIFICATION Order No. Color

Modified Jominy Test

The atmosferoi Joselny Tear indicates the hardescalarity of a given used in its the acceptance after a variety containing the property of a given used in its analysis by the hardes statistic of a variety of a vari

Here is the use by site method for determining the physicals of the center of a 2" round bar, all quenched and drawn at 1000" F. Propore the Leading Semple, Herden it in the Joselpy fixture and draw it as 1000" F. Grind the surface of the sample and take Rackwell "C."

Table 8 shows that a Jessiny sample has a casing rate of 18° F. per second at a point No. from the quenthed end. Table A shows that a 2" round, all quenched, ceals of a rate of 18" F. per second at the center.

lete the Rackwell resoling at the point Nr. from the quenched end, be-sent en first point he Josephy months bas the same conting rate as the senter of a 2" reced bet, all quenched. Assess than the Rackwell welling of this point was 34. Table C given the relationship because Referral placement of the other playing appropriate properties. In this case, with Referral TC resident 34, the other playings and the placement of the playing and the playing the second of the playing and the playing the playing and the playing a

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Diagram of Jominy Fixture



Diagram of a simple but effective Josephy Test Six-ture. The design can be easily expired by ony shop.

A detailed blee print will be furnished on request.

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Diagram of Jominy Sample-Actual Size

Standard Jominy Test

Jominy Interpretation Method

This disignon and chart show how Beed-well "C" readings are taken along the grown tertion of a Dessity stangle. These readings taken at regular 1710° intervals indicates the degree to which Jeniny Test Somple A flat surface 0.013" deep is ground length-vine on the quenched snepte, and against the control of the control The Jaminy mode is assimilated and when finish machined to then 1⁻¹. The machined to the time 1⁻¹. The mode is the finish machined to the time 1⁻¹ to the mode is the terminal to the machine to the terminal to the machine to the terminal to the term

The and the control of the control o Cooling Rate of Round Bars Table A-

Base of cooling in degrees followshelp per second for the surface, is radius and center of 1", 2", 3" and 4" rounds—both water and oil quenched.

	1	4	
Position	Surface	35 Radius	Conten
4" Rd.	100°F.	14°F.	5.6.5
3. Rd.	400° F.	1206	15°F.
10 Kd	550°F.	46°F.	2 00 00 00
1 . Rd.	850°F.	135°F.	100°F.
Media	Water	Water	Water

Ceeling Rate in Jeminy Test

Rate at exacting in degrees Fahrenheit per second or the distance indicated from the water conclud and of a secondard Jesnity self-openiched specimen. The Jesnity Test was a water openical becomes water in a continuit openich media which peroboses oil oil and water conting rates. Toble 8-

13.5
1 1 10° F. 1
7.67 9.84 9.84
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Table C.-Approximete Physical Properties in Relation to Hardness and the force or and the second service of the hardness and the second service of the hardness. These Spreas are reseasedly executed represent executed seed but till be adsected at the second second service to expert to the second seed to till be adsected at the second second seed to till be adsected at the second second second second to the second second

Rockwell	Brinell Hard-	Tensile Strength P.S.T.	Yield Point P.S.I.	Elong.	Red of
202	250 250 250	95,000/105,000 106,000/119,000 118,000/132,000	70,000/ 80,000 87,000/100,000 102,000/112,000	22/28 21/26 20/25	60/68 57/65 55/63
252	380	130,000/145,000 142,000/158,000 153,000/172,000	115,000/125,000 127,000/135,000 137,000/146,000	18/23	52/61 50/58 47/56
283	375	176,000/185,000	150,000/159,000	14/18	45/54

Data charts on the hardenability characteristics of a heat of alloy steel give the user an accurate picture of its response to heat treatments.

ject and to suggest how it might be applied to actual commercial practice.

This method of specification of steel is making considerable headway and probably will be an important factor in the selection and purchase of steel in the future.

Most alloy steels are subjected to some form of heat treatment before being put to use. Therefore, it is necessary that such steels be purchased with as accurate knowledge as possible of their ability to respond to heat treatment, or, as it is more frequently called, their "hardenability."

The hardenability of steel is principally controlled by its analysis. The surface hardness as developed by quenching is, in the main, controlled by the carbon content, and the depth of penetration of hardness is largely controlled by the alloy content of the steel as well as the inherent grain size.

There are other factors, difficult to identify, which have an effect on the hardenability of steel. This is evidenced by the fact that two steels of almost identical composition and grain size will have different hardenabilities. This individuality of a specific heat of steel, which enables it to harden to a greater extent than other heats of similar or almost identical composition, is very hard to define, and impossible to specify in terms of analysis or any other controllable factor.

Usually steel is purchased for certain requirements, and certain degrees of hardenability are necessary to make it suitable for the application for which it is purchased. It would seem, therefore, that the logical way to specify the steel would be on the basis of its hardenability rather than going at this objective by the indirect route of specifying analysis and grain size.

History Repeats

There is nothing new about this method of buying steel to a hardness specification. In the early days of steel and before chemical analysis was understood or used, steel was actually sold on a hardenability basis. The old methods of manufacture were imperfect and not subject to close control. It was impossible for the steelmaker to predict just how a certain batch of steel would harden before he had actually tested it. For this reason, steel was sold on the basis of hardenability after being tested. Chemical composition, grain size, and the other factors which govern hardenability were not understood, and the final test, therefore, controlled the classification of the product and in all probability, the price.

Experience Lends a Hand

If the analysis and grain size of a certain heat of steel is submitted to a well posted metallurgist, he can, by calling on his past experience, make a very good guess at the physical properties which will be secured from the steel by a certain type of heat treatment.

If the physical requirements of the job are not too exacting, such a metallurgical prognostication may be satisfactory. If, on the other hand, rather accurate heat treatment is necessary, then the only method of determining the suitability of steel and heat treatment will be by actual test, which involves considerable time and expense. It is possible that steel bought to a certain chemical specification might prove unsatisfactory for a particular application after the tests had been made.

A more logical method of specifying alloy steels would be to first select a certain *type* of steel; and then instead of specifying the exact chemical composition, simply require that the steel have a *certain specified degree of hardenability*; which is, of course, also a measure of strength. This method of procurement would not necessarily mean any change in the type of alloy steel being used. Thus: If a manufacturer had been using A.I.S.I. A-3140 steel in the past, he would continue to specify "A.I.S.I. Type A-3100" but would specify the hardenability instead of a full analysis range.

Prior to the advent of the Jominy End Quench Hardenability method, hardenability tests took considerable time and were expensive, and most manufacturing plants lacked the necessary equipment to conduct them properly.

The Jominy Test is simple, easy to conduct and remarkably accurate in its results. A sample of the steel being tested is machined to approximately 1" in diameter and 4" long. The sample is heated to the proper quenching temperature for that steel. It is then placed in a fixture and quenched with a jet of water that only comes in contact with the end of the sample.

The result of this quenching method is that the sample is cooled very rapidly at one end and very slowly at the other end. In between these two extremes all practical rates of quenching are applied to the sample. The rate of quenching is the major factor governing the physical properties secured from heat treatment, and by making hardness tests along the length of the quenched Jominy sample it is possible to determine how the steel behaves at different quenching rates ranging from about 600° per second at the quenched end to 4° per second at the other end.

Laboratory tests have indicated how rapidly different sized bars cool at the surface, half radius and center in both water-quenching and oil quenching. A tabulation of these cooling rates is shown in Table 1.

Table 1.—Cooling Rate of Round Bars

Rate of cooling in degrees Fahrenheit per second for the surface, ½ radius and center of 1", 2", 3" and 4" rounds—both water and oil quenched.

Quench Media	1" Rd.	2" Rd.	3" Rd.	4" Rd.	Position
Water	850° F.	550° F.	400° F.	100° F.	Surface
Oil	120° F.	58° F.	30° F.	15° F.	
Water	135° F.	46° F.	27° F.	14° F.	1/2 Radius
Oil	53° F.	24° F.	12° F.	61/2° F.	
Water	100° F.	32° F.	15° F.	8° F.	Center
Oil	45° F.	18° F.	9° F.	51/2° F.	



From this table it is easy to determine how fast any particular part will cool by whatever method of quenching is to be used. In order to check the effect of this quench on the part being heat treated, it is only necessary to observe the hardness of the Jominy sample at the point having the same cooling rate. The hardness observed on the Jominy sample can safely be assumed to very closely approximate that which will be developed on the heat treated work having the same cooling rate.

Important Differences

The advantages of such a method of specification can be illustrated by the following example: Assume that based on past experience the steel selected for a certain application was A-3135. If the quantity involved is sufficient, two heats might be shipped from the producing mill. These two heats might have the analysis listed below as Heat "A" and Heat "B".

cat 21 and	i iicat D	
	Heat "A"	Heat "B"
Carbon	. 0.34	0.38
Manganese	0.62	0.76
Silicon	0.22	0.34
Nickel	1.15	1.40
Chromium	0.57	0.74
Grain Size	#8	#5

It should be noted that both of these heats fall within the published analysis limit of A-3135. Obviously there would be a considerable difference in the hardenability of the two steels, particularly in the depth

of hardness penetration. It is quite possible to imagine that the Heat "A" might be too low or Heat "B" too high in hardenability for the application for which they are purchased, although they both would meet the specification A-3135, with grain size 5 to 8.

Had these steels been ordered as Type A-3100 with a reasonable hardenability range specified, known to be suitable for the application, both heats could be applied and satisfactory results secured without change in the heat treatment.

It must be remembered, of course. that no mill can melt to an exact chemical specification and for this reason all steels are specified within a chemical analysis range. It is equally true that no mill could produce steel to an exact hardenability specification. Therefore, a hardenability range must be selected which will allow for normal production variation. If a reasonable hardenability range was specified and if the mill were not confined to a specific analysis range, they would probably have a better chance of furnishing a satisfactory product on the hardenability basis.

Suggested Standards

In carrying the idea of specification of alloy steel on a hardenability basis to a logical conclusion, it might be possible to speculate on the adoption of about 12 major standard alloy compositions which would be similar to the following types and A Jominy Hardenability Test Sample being quenched. Note that the quenching fixture is convenient to the furnace. This is to prevent heat less during the transfer of the sample in the operation of this test.

would apply to most of the structural alloy steel tonnage now produced.

Alloy	Suggested
Steel Composition	Identification
Nickel:	
Type 2300	N-1
Type 2500	N-2
Chromium:	
Type 5200	C-1
Molybdenum:	
Type 4000	M-1
Chromium Nickel:	
Type 3100	CN-1
Type 3200	CN-2
Chromium Molybde	num:
Type 4100	CM-1
Nickel Molybdenum	1:
Type 4600	NM-1
Type 4800	NM-2
Nickel Chromium	Molybdenum:
Type 9400	NCM-1
Type 8700	NCM-2
Type 4300	NCM-3

In these 12 suggested steel types the range of alloying elements would be considerably broader than those now used in specifying alloy steel. Carbon, of course, would be eliminated from the specification entirely and a simple system of letters or numbers could be adopted to identify the different analysis types.

If a quick hardenability test could be made on a heat of steel before tapping, then by furnace or ladle additions the steel could be brought to the proper hardenability range and the inconvenience and expense of off heats would be materially reduced.

This idea may be reaching rather far into the future, but sufficient experimental work has been done to indicate that very interesting results can be secured from a cast sample by the Jominy method and that the results so obtained correspond very closely to those secured from finished bars of the same heat.

The time element required for making the Jominy Hardenability Test on a cast sample and the rate of loss of oxidizable hardening elements, such as chrome and manganese, would have to be closely coordinated so that the method would introduce some very interesting problems in furnace operation

(Continued on page 290)

Never Before - A Motor Like This



You've never seen a motor like this new Fairbanks-Morse Motor, because never before have so much stamina, versatility, and protection been built into one motor housing!

CHECK THESE POINTS ...

- V 1. 40° C. Motor. V 2. Protected frame.
- V 3. Conduit box has controls that give new meaning to "adaptable," "convenient," and "handy."
- 4. Famous Fairbanks-Morse COPPERSPUN Rotor—the ONLY rotor centrifugally cast in ONE piece and of COPPER.

If you are buying motors now but want them to be up-to-date for postwar production, see this motor demonstrated. There's no other way to appreciate how much more it offers you! Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.



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FAIRBANKS-MORSE

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ENGINES WATER SYSTEMS
SCALES
STOKERS
TORS FARM EQUIPMENT
RAILROAD EQUIPMENT



Motors

Nov



CARBIDE ROTARY FILES



THE addition of six new tools to its standard lines of cemented carbide rotary files, is announced by Carbur, Inc., Lincoln Park 25, Mich. These are available in three shapes each of which is furnished

in two sizes. The new shapes are illustrated with the two ball end types originally introduced to the trade. All of these tools have cutting teeth ground from the solid. Manufacturer states that these tools can be run at much higher speeds than have been possible with steel rotary files.

THREE NEW CARBON BLACKS

RESEARCH in carbons that would fit into synthetic rubber requirements, has led to the development of

three new carbon blacks by Binney & Smith Co., 41 East 42nd St., New York, N. Y. These are of the conducting furnace, fine furnace and high modulus types, and are announced as Statex-A, Statex-B, and Statex-93. With these developments the entire field of carbon properties is covered, a grade and type being available for all industry requirements.

PORTABLE FIRE EXTINGUISHER



CARBON Dioxide fire extinguisher that requires only one hand in operation is announced by Randolph Laboratories, Inc., 8 E. Kinzie St., Chicago, Ill. It is known as Model FF-4 in the company's 4 lb.

CO₂ series, and features a self-aimed, fixed discharge horn, and a thumb-operated trigger valve that releases a penetrating blanket of carbon dioxide. Fire-resistant horn on the unit is permanently regulated to fixed firing position.

DEOXIDIZING & CLEANING ANODIZING RACKS

ALKALINE solution known as Deox-Aluminum is announced by the Technical Processes Divn., Colonial

Alloys Co., Philadelphia, Pa., for deoxidizing and cleaning anodizing racks. It is supplied as salts and mixed with water, and this solution may be kept in any alkaline resisting container. It is used as a dip at room or elevated temperatures. Manufacturer states it may serve both as an aluminum anodizing rack stripper and as a general cleaning method to supplant conventional systems.

NEW MARKING MACHINE



GENERAL purpose hand operated marking machine is announced by Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh, Pa. It is used for clearcut, legible marking of part numbers, patent numbers,

names, coding, trade-marks, etc., on a range of shapes and sizes of parts up to 6" in diameter or thickness. Flat parts are marked by means of solid roller dies or mortised roller "ies and interchangeable segment type Round parts are marked with flat die or interchangeable steel type.

ANNOUNCE CORRUGATED ASPHALT SIDING

CORRUGATED asphalt siding is announced by Certain-Teed Products Corp., 120 So. La Salle St., Chicago,

as being an emergency material quite suited for wide variety of construction uses. It consists of two sheets of heavy felt, each soaked in a resino--bituminous saturant, laminated together with a highmelting point adhesive and corrugated. Practical tests have demonstrated, it is claimed, that it will stand up in all leads of weather.

NEW PEBBLE FINISH



NEW pebble finish for machine tool surfaces which it is claimed not only uses far less finishing materials but can be applied in ½ to ½ less time, is announced by the Sherwin - Williams Co. It is said to

provide a successful solution to the problem of how to dress-up a machine surface without fillers, sanding and numerous coats of sealing paint. With the new method it is now possible to finish a machine tool in three operations instead of seven as formerly required.

CLOSE-COUPLED CENTRIFUGAL PUMPS

NEW line of type G.M.C. c 1 o s e coupled centrifugal pumps designed for many services, notably marine en

by

duties, where compactness is at a premium, is announced by the Aurora Pump Co., 96 Loucks St., Aurora, Ill. Impellers and shells are streamlined in the interest of high efficiency and smooth, quiet performance. Pumps are available in a capacity range of from 5 to 1,000 g.p.m. for operation against heads up to 100 lbs. p.s.i.

PORTABLE TESTING SET

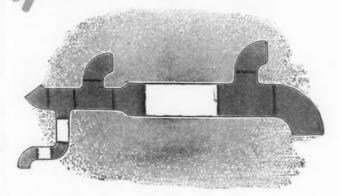


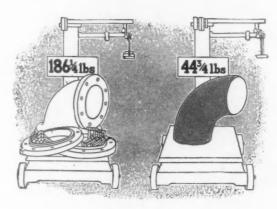
NEWLY designed 50,000-volt portable test set for use on single - phase 115-or 230-volt, 50- or 60- cycle circuits, is announced by the General Electric Company. The set is intended for application in cable

factories, industrial plants, central stations, laboratories, and wherever high voltages up to 50,000 volts are required for testing electric apparatus or insulating materials. The three-wheel truck on which the set is mounted is provided with roller-bearing mounted wheels.

(Continued on page 124)

Juays with Tube-Turn welding fittings



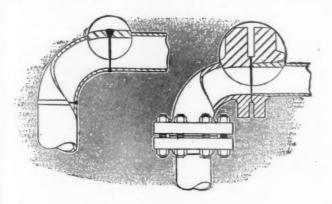


1. Easily preassembled—speed installation

Save from 50% to 75% time by pre-assembling difficult piping sections like this in the shop. Tube-Turn fittings are ready to use. They simplify lining-up, require only easy, circumferential butt welds. This insures faster, better and safer welding by either veteran or novice welders—a real war production help.

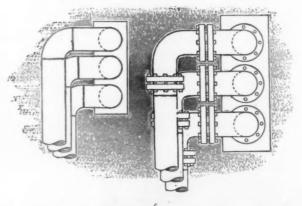
2. Reduce weight-conserve materials

Look at the weight saved by using an 8" Tube-Turn elbow instead of a heavy 8" cast iron flanged ell with companion flanges, studs and nuts. Multiply this saving by the many fittings in any piping system and it's easy to see how Tube-Turn fittings save tons of weight, metal and critical materials.



3. Avoid "down time"-reduce maintenance

Note how the welded connection virtually forms a continuous tube without joints-insures permanently leakproof, trouble-free connections that last as long as the pipe itself! Such maintenance headaches as leaks, gasket changes, bolt tightening, caulking, threading, and difficult insulatings are totally eliminated.



4. Streamline systems—save space

Contrast the space saved in these compound turns by using Tube-Turn elbows instead of flanges. Tube-Turn fittings require less space, permit streamlined, compact layouts and neater, more efficient piping. Elbows can be cut to any odd angle. Saving space is important in most industries, is vital in shipbuilding!

TUBE TURNS (INC.) Louisville, Ky. Branch offices: New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Houston, San Francisco, Scattle. Distributors in principal cities.





War Bond

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Respirators

that look

TEN YEARS

AHEAD

Pulmonary diseases do not always

strike quickly. Often they wait two,

five or even fifteen years from the

Willson has long studied occupa-

tional diseases-and the dusts which

produce them. And the many respi-

rators which Willson has designed to

protect against these dusts have won

the confidence of safety executives all

All Willson protection is scientifi-

cally engineered to provide the utmost

in safety and comfort. That is why so

many Safety Directors and Purchasing

time of exposure.

over the world.



(Continued from page 122)

TURBINE REDUCTION UNITS

A LINE of standardized, completely self contained, industrial turbine reduction units is announced by the Cone-Drive Division, Michigan Tool Co., 7171 E. McNichols Road, Detroit 12, Mich.

They are available in 261/2 and 37 hp base ratings. The former is the output rating of a 41/2" Cone-drive center distance unit, while the larger unit has Cone-drive gears of only 6" center distance. Both types are designed to operate on input speeds of 5000 to 6000 rpm. The two basic units are available in a selection of standard ratios ranging from 31/2 to 8 to one.

SELF-PRIMING BILGE **PUMP**

NEW self-priming pump announced by the Blackmer Pump Co., Grand Rapids 9. Mich., is said to be specified by the

United States Coast Guard for use on No. 2-700 cu. ft. life boats. The pump has capacity of 6 GPM at 50 Revs. According to the Blackmer Co., users of industrial hand pumps may find that this new pump with flange mountings offers certain advantages over units now in use. This is especially true in transferring liquids from vats where the pump is mounted on the edge of the vat.

HAVE BUILT-IN AIR FILTER



EVAPORA-TIVE condensers equipped with builtin air filters to protect against impurities in the cooling systems, are announced by Drayer Hanson, Inc., Los Angeles, Calif., as a feature of its

Wat-R-Miser line. The filter is standard equipment on all models which cover the full range of popular sizes from capacities of five to 100 tons. Filter is all metal, and is easily removed for washing or cleaning.

FOOT-AIR **OPERATED PROJECTION** WELDER

FOOT operated, air operated, press type, floor mounted projection welder available with air cooled or water

transformers in capacities including 150 KVA-having liquid cooled welding dies, is announced by the Universal Power Corp., 4300 Euclid Ave., Cleveland, Ohio. Units are equipped with tube type timers with magnetic or water cooled tube contactors for control of squeeze, weld, hold time, or providing pulsation weld feature non-synchronous or synchronous timing.

ELECTRONIC GENERATOR



VARIABLE frequency electronic generator offering frequency wide and high range power output, has been developed by Communication Measurements Laboratory, 120 Greenwich Street, New

York, to fill the the need for a versatile source of power, especially for engineers requiring test power at various loads through a wide frequency range-300 to 3500 cycles. Unit is said to be proving valuable where government specifications call for complete tests on the production It may also be used for testing transformers and condensers.

TUNGSTEN CARBIDE TOOL GRINDING

NEW precision grinding wheel for grinding tungsten carbide tools is announced by Electro Refractories

Alloys Corp., Vars Bldg., Buffalo 2, N. Y. Wheel is said to give a vastly superior finish and to eliminate damages to tools commonly caused by localized heating. Technical composition is said to increase wheel life 50 to 100 percent.

MASTER CONTROL SWITCH



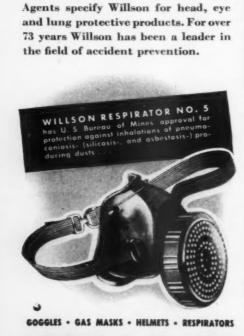
A NEW master control switch for heavy duty service is announced by the General Electric Co., Schenectady, N. Y. Known as Type SB-9, it is for use whereever repetitive operations of electrically operated devices run into many thousands per week. A table of interrupting ratings as well as a detailed description of the switch and its features, is contained in Bulletin GEA 4114.

ARTISTS VAN DYKE REFILL LEADS

HI-DENSITY microtomic Van Dyke Refill leads, which will fit all standard sizes and makes of holders are an-

nounced by Eberhard Faber Pencil Co., 37 Greenpoint Ave., Brooklyn 22, N. Y They are available in degrees 6B, 5B, 4B. 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H and 6H, packed one-half dozen 5-inch leads in a wood lined box with slip off cover, each lead being in a separate compartment.

(Continued on page 126)



PRODUCTS INCORPORATED

ING NOVEMBER, 1943 freonic ring ency nigh has by ion YOUNGSTOWN Labeen-Ven atile eers oads 0 to ving ction ting and facilities. ision for sten anectro and I. Y. erior tools ting. ease H the V. Y. herecally ands tings f the ed in mi-Dyke which idard es of an-Co., , 4B. , 5H -inch

IN the period of World War I, The Youngstown Sheet and Tube Company "came of age."

1915 began in depression--with fear and uncertainty at home and abroad. But that courage and vision which built Youngstown into a \$20,000,000 corporation in 15 years, now brought a 50% increase in capital stock and a huge construction program. The next three years saw a modern, integrated plant completed -- 3 new open hearths, another blast furnace, batteries of coke ovens, additional finishing mills, new laboratory, hospital, works office building, hundreds of homes for employees. When war ended, nearly \$39,000,000 of stockholders' money had been plowed into plant

The decision to expand was timely. French and British orders came with a rush in mid-1916.. After April 1917, America and her Allies demanded and received every possible pound of steel to win the

In those events we see a familiar pattern -- tremendously increased production, labor scarcity, high wages, taxes taking 80% of profits. But fortunately the American system of private enterprise was enabling Youngstown to earn good profits-sufficiently high to pay off all its bonded indebtedness, to pay generous dividends to stockholders and to fortify itself with reserves which enabled it and its employees to survive the lean early '20's.

Free enterprise, which made the steel industry strong, won that war for America and democracy, and built the business system on which we must depend for national survival today

Historical Series - . . No. 7

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

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Manufacturers of CARBON - ALLOY AND YOLOY STEELS Pipe and Tubular Products - Sheets - Plates - Conduit-Bars - Tin Plate Rods - Wire - Nails - Tie Plates and Spikes - Alloy and Yoloy Steels



NOTICE: New Stock List Now Ready; Write Today for FREE Copy.

Twenty-three years ago the Bissett Steel Company opened one of the Mid-dlewest's first independent steel warehouses, and from that day forth established a reputation for pioneering in its field.

Pioneering today is no less important than it was yesterday. At the moment, the problem of N. E. replacements is foremost in steel users' minds, and once again, Bissett is doing a pioneering job
—making research, collecting facts,
gathering case-history material of inestimable value to production men, purchasing agents and executives.

This information will soon be re

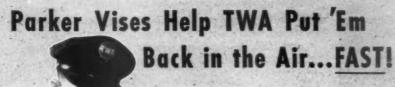
leased. And any information possessed by our engineers and metallurgists is at your disposal for the asking. When you have a tough problem, give us a ring.

FOR IMMEDIATE DELIVERY

N. E. Steels and Standard S.A.E. Steels, both Carbon and Alloy, Hot Rolled and Cold Drawn • Chisel Steels • Cumberland Ground Shafts • Drill Rod • High Speed Tool Bits • Shim Steels • Tool Steels • Tool Steel Tubing

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steel company



TWA's maintenance department is organized to turn out precision work at high speed . . . its layout is arranged for high efficiency . . . its machinery and tools selected as best suited for the job.

That's why TWA's use of Parker Vises is so significant. Working on airplane parts, a vise slip may mean a spoiled unit. TWA plays it safe . . . picks Parker Vises to protect against waste of materials and loss of valuable time. The Charles Parker Company, Meriden,



Handled by Leading Distributors

PARKER VISES



AMERICA'S OLDEST

(Continued from page 124)

RADIANT HEATER AND RESISTOR D E V E L -OPMENT of new Regan radiant heater and resistor. is announced by Techtmann Indus-

tries, Inc., 828 No. Broadway, Milwaukee, Wis., the core of which will not deteriorate at temperatures up to 1700 deg. F., it is claimed. Unit is designed for use in annealing ovens, electric furnaceswherever high temperature radiant heat is required. It also serves as a resistor. It is obtainable in a range from 32 volts to 220

12" x 4" THICKNESS PLANER



NEW 12" x 4" thickness planer which is said to turn out work as fine as larger machines, is an-nounced by Boice-Crane Co., 953 Central Ave., Toledo, Ohio. It is said to plane the

hardest, also the brashy, splintery varieties of woods down to veneer-like thickness, ready to finish without sanding, and stock as short as 61/2". Bench or floor type models are offered in a choice of drives.

RESTORES **ROCK-HARD** BRUSHES

NEW cleaner for restoring paint brushes, named Prestorer, is announced by Technical Development

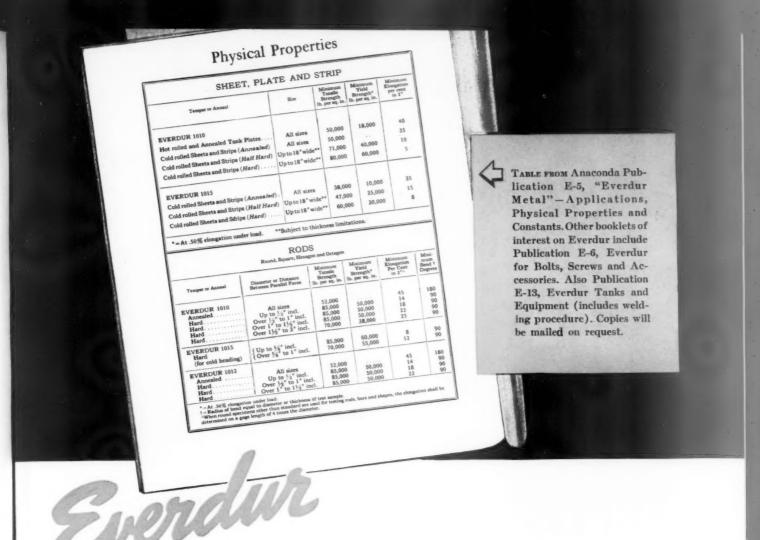
Laboratories, Tenafly, N. J. It is said to restore "hard as rock" old brushes in from 12 to 96 hours. Manufacturer states that it will not injure the hands and is noninflammable, and does not throw off poisonous fumes. The solution may be strained through cheese cloth and reused.

CONVERT D C TO A C



A NEW line of two-bearing (ball), 3600 rpm motor-alternator sets in integral ratings up to 5 kva, single phase, is announced by the Motor Division of the General Electric Co. Compact and light in weight, these alternator sets are designed for converting direct current to alternating current for various applications. In general these include any applications which require a-c power, such as radio and other electronic equipment of standard a-c design.

(Continued on page 129)



strong – durable – workable – weldable ... and moderately priced

A Shape for Every Purpose

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ions and dard Everdur* Metal is produced by The American Brass Company in all commercial forms—sheets, strips, plates, wire, rods, bars, shafts, tubes, shells, pipe, hot pressed parts, drawn shapes, angles, channels and special products. Many finished products made of Everdur are available through leading manufacturers.

An Alloy for Every Need

This original copper-silicon alloy group, trademarked "Everdur" is manufactured in three standard alloys: 1010 for severe hot working, 1015 for cold working. Everdur 1012 is a leaded alloy in rod form for screw machine products.

And Technical Cooperation

Your inquiries on Everdur Metal will receive the close attention of The American Brass Company's Technical Department, staffed with men whose practical experience in many branches of the metal-working field frequently enables them to determine the one best metal for a specific application.

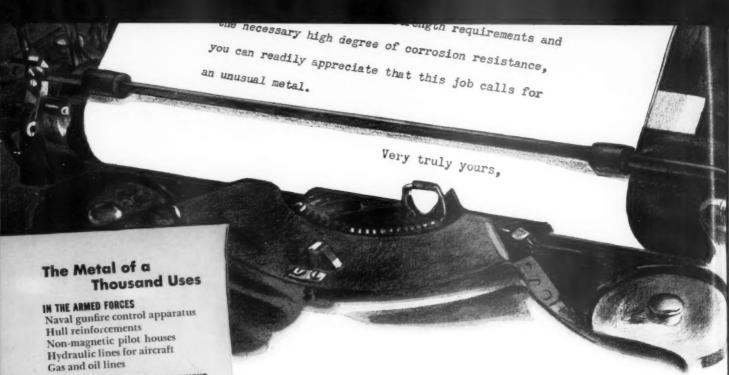
*Reg. U. S. Pat. Off.



THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

43107



Looks like another call

S

This tin-free, high strength copper-silicon alloy is an "unusual" metal. It was especially developed for those out-of-the-ordinary structural and engineering jobs requiring a combination of properties usually not found in one material.

Everdur is a workable alloy . . . it can be readily machined, drawn, rolled, spun, stamped, cast and forged. It is a strong and tough

This trade-marked Copper-Silicon Alloy holds an eighteen-year record of dependable performance. It has been used successfully in many installations where other metals failed in a relatively short time. Some of these applications are listed at the left. A brief summary of Everdur's physical properties is given on the following page.

for Everdur...

and here's why -

metal, too-with a tensile strength comparable to mild steel. It is a non-rusting alloy, with a corrosion resistance equal to that of copper. Everdur Metal can also be resistance welded and, with a filler rod of similar composition, strong and dense welds can be made readily by the carbon arc or oxy-acetylene method.

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut Subsidiary of Anaconda Copper Mining Company In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

PLATING ROOMS-PICKLING EQUIPMENT Ducts, baskets, drums, drains,

dryers, sludge lines, tumbling barrels, wire brushes.

RAILWAY EQUIPMENT-ROUNDHOUSES

Air conditioning and signal equipment, water tanks, electrical conduit, welding rods, train shed skylight frames.

OIL FIELDS AND REFINERIES

Chain, bolts, cable, agitator tanks, electrical conduit, sludge

BRIDGES-ENGINEERING STRUCTURES

Bolts, tie rods, rivets, electrical conduit, angles, channels, framing members.

MARINE FIELD-DOCKS-SHIPYARDS

Fuel tanks, marine hardware. wood and lag screws, bolts, and other forged, cast or machined fittings.

SEWAGE PLANTS-WATER WORKS

Screens, gates, baffles, weirs, filters, frames, tanks, anchors, valve stems.

BREWERIES-DAIRIES

Kettles, vats, filters, screens, hop strainers, wort pans, process tanks and equipment.

PULP AND PAPER MILLS

Carrying lines, fabricated and welded fittings, screens, doctor blades, save-all pans.

ELECTRICAL EQUIPMENT—HARDWARE

Circuit breakers, screws, bolts, nuts, washers, rivets, studs, clamps, U bolts, eye bolts, turnbuckles, etc.

CHEMICAL AND PROCESS INDUSTRIES

Pipe lines, kettles, stills, welded fittings, valves, unfired pressure vessels, pumps, storage tanks, evaporators.

ANACONDA Everdur Copper-Silicon Alloy

(Continued from page 126)

FOUR INDEXES-56 HOLES



EXAMPLE of how standard machines be can adapted to work which otherwise would require the use of a special machine is furnished by this application of Snyder standard

20V 16 drilling, milling and boring machine. Operation is the drilling of 56 holes in locating ring. For this operation the machine is equipped with a 14 spindle multiple head which completes the 56 holes after four indexes. Machine is built in two sizes, the larger for drilling holes up to 5", the smaller for holes up to 4" or equivalent. Snyder Tool & Engineering Co., 3434 E. Lafayette St., Detroit, Mich.

SPOT FACER-COUNTERBORING



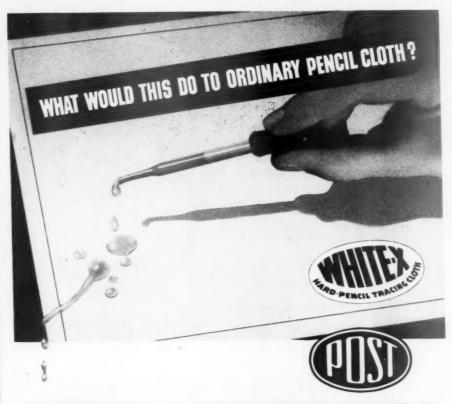
NEW spot facer and counterboring tool with cutter that can be quickly removed for sharpening, is announced by the Nash-Zempel Tool Divn. of the J. M. Nash Co., 2354 No. 30th St., Milwaukee, Wis. Cutter is said to center itself perfectly when replaced in the bar and tightening down the cone and locking the knurled nut. Chip clearance is in bar, not in cutter. These tools are made in 41 standard sizes. Special sizes available to suit requirements.

SMALL DRAFTING MACHINE



SMALL drafting machine that can be mounted on a portable board and used in shop or field is being marketed by the V & E Manufacturing Co., Pasadena, Calif. The new machine is called the Vemco Junior Drafter. It weighs 3 pounds. The protractor is 3¾" in diameter and graduated in degrees with figures by quadrants. Ten minute vernier plate is extra.

(Continued on page 130)



MOIST HANDS CAN'T MAR WHITE-X SURFACE OR TRANSPARENCY

The moisture resistance of White-X is important. Because of it White-X "takes" hard-pencil lines uniformly black, no matter how many moist hands have come in contact with its special surface. And since water on White-X leaves no ghosts, prints from pencil drawings are more vivid in contrast—more uniform in line and background. You can take pride in White-X drawings.

Write or phone our Chicago office or your nearest Post dealer for Free sample of White-X. Fine tracing media and sensitized papers are ready for immediate delivery.

The Frederick Post Co.

Phone KEYSTONE 7000 · CHICAGO



PURCHASING DEPARTMENT

continuous continuous

Applicants must qualify under War Man Power Stabilization Plan.

> Write to Box 949, PURCHASING



(Continued from page 129)

NEW INSTRUMENT MEASURES RESILIENCY

I N S T R U - MENT named Resiliometer is announced by the Precision Scientific Co., 1736 North

Springfield Ave., Chicago, for determining the resiliency or "springiness" of materials. Resiliency of rubber and extensible plastic compounds is indicated by the rebound of a weighted plunger dropped on test specimen from a predetermined height. Indicated uses are measuring rate and state of cure, matching competitive compounds, factory control tests, quality tests without damaging product, and so on.

TAP RECONDITIONER



IMPROVED design of its tap reconditioner is announced by the Detroit Tap & Tool Co., 8432 Butler, Detroit 11, Mich. It is featured by a new spindle head that accommodates interchangeably a

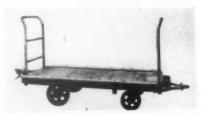
wide range of motor types for the various service voltages, phases and frequencies required in industry. Various improvements have been made to increase the ease with which taps may be conditioned on the machine.

WALTON TAP EXTRACTOR RECONDITION-ING SERVICE

THE Holders, collars, and sleeves of tap extractors manufactured by The Walton Company, 94 Allyn St.,

Hartford, Conn., are guaranteed against breakage, and such broken or badly damaged parts will be replaced without charge if extractors are sent to the Walton Company. The alloy steel fingers because often subject to severe strains are not guaranteed against breakage, and charge is made for their replacement. Repaired extractors are returned within 48 hours.

ALL-PURPOSE INDUSTRIAL TRAILER



NEW All-purpose industrial trailer is announced by the Rose Mfg. Co., Detroit, Mich. Automatic hitch is standard, although manually operated can be furnished. Racks are interchangeable on sides or ends. Caster wheels are equipped with Hyatt bearings and high pressure lubrication.

(Continued on page 132)

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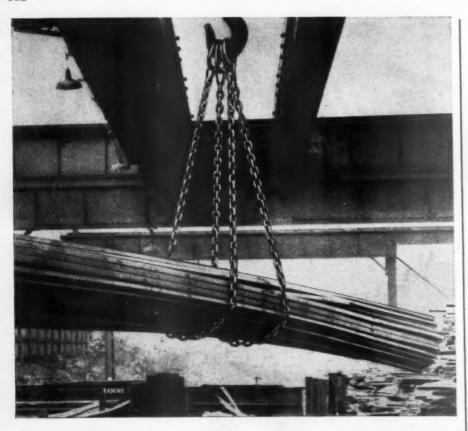
Photo, courtesy Lockheed Aircraft Corp.

Lockheed P-38 Lightnings spelled such trouble that the enemy aptly renamed them "Fork-tailed Devils." Primarily fighters, they raise additional hell as bombers, escorts, tank-busters and reconnaissance planes. Swaths of smashed Axis planes with a suitable garnish of blasted ground installations testify to the P-38's battle-ability.

Weighing seven tons, heavily armored and whooping along at 400 m.p.h. plus, these Lightnings might seem too much for one pilot to handle. But, handle it he does, and to tremendous advantage. The designers saw to that. Not the least of aids to maneuverability they included are Fafnir Aircraft Ball Bearings on the controls!

Combat equipment . . . planes, ships, tanks, gun mounts, all types of mechanical equipment . . . is taking Fafnir Ball Bearings by the millions. Others are going into the machines that turn out this fighting equipment. "On duty" twenty-four hours a day, both at home and abroad, Fafnirs are setting performance records which promise much for the troublefree, frictionless operation of future peace time products. The Fafnir Bearing Company, New Britain, Connecticut.





A BOND OF SECURITY

that is winning Uncle Sam's production drive

Thousands of CM Herc-Alloy Sling Chains are helping to win America's production drive by moving valuable materials such as molten metals, guns, tanks and fabricated assemblies. The added bond of security provided by the

extra swell of metal at the weld of these Herc-Alloy Sling Chains gives industry an extra margin of safety and wear. Herc-Alloy Chains, made from special analysis steel, never require annealing. Engineering catalog No. 44 will be promptly sent on request.

CMHIRGALLOY

SLING CHAINS

INVEST REGULARLY IN VICTORY-BUY WAR BONDS AND STAMPS

COLUMBUS - McKINNON CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corporation)

120 FREMONT AVENUE, TONAWANDA, NEW YORK

BRANCH OFFICES: NEW YORK . CHICAGO . CLEVELAND

(Continued from page 130)

CHECKS DIAL ACCURACY



NEW device for checking the accuracy of dial indicators, named the Clarkator, is announced by the Clark Instrument Inc., 10200 Ford Road, Dearborn, Mich. It employs the sine bar prin-

ciple, checking against the tangent of the angle. It is said to be suitable for receiving and periodic inspection both of the standard direct reading indicator and the reversed reading indicator used on Rockwell hardness testers.

PRECISION IN SPRAY NOZZLES



NOZZLE that produces a full cone spray pattern at a highly uniform degree of atomization, known as the Fulljet spray nozzle, injector type, is announced by Spraying Systems Co., Chicago, Ill. It is designed for use in gas washers and related process applications. The narrow-cone provides a high degree of impact for any given pressure. Where required an efficient syphoning action is readily obtained. Water and other liquids of similar viscosity may be handled. The nozzle is available in wide range of sizes having definite performance characteristics.

TRACK LINE ASSEMBLY



NEW V-grooved wheel caster especially designed for track line assembly, is announced by the Bond Foundry & Machine Co., Manheim, Pa. The V-groove enables use of angle iron tracks. The caster has double ball race construction and is pressure lubricated throughout. The V-groove wheels are available in 4" to 10" diameters. The company also announces a dual wheel caster with an oscillating axle that is claimed to keep the load uniformly distributed on both wheels even when operating on rough surfaces. Caster is said to be suited for use on engine stands.

(Continued on page 134)

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leather serves best

In thousands of mechanical applications both on the civilian and war fronts... and as an aid to greater safety and efficiency on the production lines... leather is one material that stands head and shoulders above any other. It has an unusual combination of qualities which make it tougher, more resilient, stronger and more pliable. It will carry on, giving longer, more economical and satisfactory service, where other materials might fail.

But—to bring out the very best in leather, the experience, ability and integrity of the manufacturer is most important. Our 65-year reputation for creating products of dependable quality, for special and standard use, is well known.



Chicago Rawhide Products on the production lines-



Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application

CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

1301 ELSTON AVENUE, CHICAGO, ILLINOIS

DETROIT . NEW YORK . PHILADELPHIA . LOS ANGELES . PITTSBURGH . BOSTON . PEORIA . SYRACUSE . CLEVELAND . CINCINNATI

THE BETTER FASTENING METHOD



SOCKETS SCREWS by HOLO-KROME

Fastening problems are efficiently solved by using Holo-Krome FIBRO FORGED Socket Screws . . . More compact design made possible . . . Reduction of weight in parts to be fastened . . . Manpower time reduced because of Internal Hex Wrenching feature - quick and positive tightening.

GUARANTEED UNFAILING PERFORMANCE

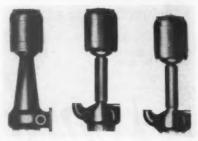
SAVE WEIGHT - SPACE - TIME

HOLO-KROME

THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

(Continued from page 132)

NEW COOLANT PUMPS



THREE new coolant pumps, each available in 17 standard sizes, termed War Models, are announced by the Pioneer Pump & Mfg. Co., Detroit, Mich. Model VBD has three outlets to permit piping on either right or left side or back into coolant sump through intake bracket. Model VA is for submersion in coolant. Model VC is for external uses where tank cannot be utilized efficiently, and is mounted either vertically or on horizontal

INTERCHANGEABLE MOTORS



ALL Motor types in any one frame size of Uni-Shell motors recently announced by Robbins & Myers, Inc., Springfield, Ohio, are said to be interchangeable. In any one frame size, shell dimensions, heat fit, bolt circle holes, shaft size and conduit box mountings are identical for all motor types. This is true of polyphase induction motors, capacitor start induction motors, standard d.c. motors and generators, repulsion induction motors, as well as any other types. Cut shows polyphase, d.c., and repulsion induction motors with covers added.

ACTIVATES TOGGLE CLAMPS



NEW device, designed for activating toggle clamps, has been introduced by Airop, Inc., Dearborn, Mich. Its trade name is Airop. It was developed to hold down large parts or assemblies where clamps would be required to encircle a job. The new unit is said to eliminate having operator repeatedly walk around the work to manipulate the many clamps. A gang of Airops can be controlled by one central control valve. They may also be set up for foot operation where operator must use both hands to guide work.

(Continued on page 138)

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e KROPP

Engineering Representatives in Principal Cities



Proudly we fly the Army and Navy "E" flag with three stars, awarded for excellence and proficiency in the production of war materiel.

Nov

."BUSS Fuses have kept our Cupola Blower Operating without a Needless Shutdown .formerly we had an average of two outages per month,"



ELECTRICAL MAINTENANCE SUPERINTENDENT KARL MOEHLMAN

of Gisholt Machine Co., Madison, Wisconsin

"From a production standpoint," continues Mr. Moehlman, "probably the most important circuit in our plant is for a 50 horsepower, 220 volt, 3-phase motor operating a cupola blower. This blower simply must not fail, otherwise serious production loss occurs, involving damage to critical material.

"This particular circuit was blowing fuses at an average rate of twice a month, until we switched to BUSS Super-Lag fuses more than six months ago. Since the change, not a single fuse has been blown."



Why BUSS Fuses Don't Blow Needlessly



10 FEATURES

the FUSE-CASE help make it possible. . . .



in the design of the FUSE-CASE

the FUSE-LINK completes the job. BUSS



Can Mr. Moehlman's experience at Gisholt suggest to you a way to eliminate needless production shutdowns due to fuses opening needlessly? His experience is like that of many others who have found that the long time-lag of BUSS Super-Lag fuses prevent needless shutdowns due to harmless overloads. Yet these fuses give you the protection you need when serious trouble occurs.

Buss fuses require no maintenance or periodic inspection. They don't open needlessly. If one opens, you can be sure some condition needs correction. When one opens, it requires less than 45 seconds to renew with an inexpensive link.

Here is why BUSS fuses greatly reduce or entirely prevent needless blows

The fuse case is designed to insure good contact on the link, even when the fuse is renewed by an inexperienced person—and it is so designed that vibration or heavy overloads or the constant heating and cooling of the fuse will not permit poor contact to develop. Thus excessive heating, which causes fuses to blow needlessly, is prevented.

The fuse link used is the famous "BUSS Super-Lag." It has lag-plates attached to it. These give it a long time-lag so that unusually heavy starting current or other harmless overloads will not cause the fuse to blow.

How to solve the "shutdown" problem

Pass the word along that all purchase records dealing with circuit protective devices should be immediately changed to call for BUSS Super-Lag Renewable fuses. Then, as fuses are replaced or new installations made, your plant will automatically get the benefit of the carefree, trouble-proof protection that BUSS Super-Lag fuses afford.

BUSSMANN MFG. CO., University at Jefferson, St. Louis 7, Mo.

Division McGraw Electric Company

Super-Lag FUSES SOLD THROUGH WHOLESALERS



TRY THEM TODAY

"No matter what the metal cutting job is there is a Spartan Blade for it and it will satisfy.

Hundreds of plants throughout industry demand and receive Spartans from their local Spartan Distributors. We say they'll answer your problems and ask you to make us prove it."

Spartans Get Results
Spartan Saw Works, Inc.
Springfield, Mass.

(Continued from page 134)

STANDARDIZED MILLING CUTTERS



LINE of standardized thread milling cutters is announced by the Detroit Tap & Tool Co., 8432 Butler, Detroit 11, Mich. Blanks for such "standard" sizes are now carried in stock, finish-machined and heat-treated, ready for finish grinding of threads. Included in the line are both shell and shank type cutters. Diameter range of the 40 different shell type "standard" blanks is from 1½" to 3½". Twelve different shank types are stocked, ranging from ¾" to 1½" in diameter.

WAR-TIME HOUSING



THE Kalamazoo portable home illustrated above is offered as a practical, low-cost answer to the housing problem in war production areas, by the Kozy Coach Company of Kalamazoo, Mich. It comprises a space 20' x 8' which has been ingeniously designed as a 3-room, all furnished apartment capable of housing four people. These homes are delivered on trailer running gears from which the unit is lifted and mounted on six concrete blocks—ready for occupancy.

NEW TOWMOTOR TRUCK



TO provide a fork lift truck with a wider range of capacities for efficiently lifting, moving and stacking all types of materials, and at the same time make adjustments in line with wartime stand-

ardization programs, Towmotor Corp., Cleveland 10, Ohio, has developed a new Model—L.T-50. It is available in a 5000 pound capacity with either 104" or 144" lift, or in 4000 pound capacity with 144" lift. Maximum travel speed is 8 miles an hour; loaded lift speed is 40 ft. per minute. Overall length, less forks, 88". Truck is featured by maximum maneuverability in close quarters.

LONG LAYOUT PLATE



LONG layout surface plate equipped with special V-Blocks, has been developed by the Challenge Machinery Co., Grand Haven, Mich. One V-block is permanently anchored to the table and another mounted in a T-slot allowing adjustment to any desired position along the table top. If desired, plates can be grooved and keyed so that two or more can be assembled and mounted into one complete unit—for example, four 54" x 144" plates assembled into one huge unit 108" x 288".

FIRE FIGHTING SHIELD



FIRE fighting shield for use at close quarters, has been developed by the American-LaFrance-Foamite Corp., Elmira, N. Y. It is built of sheet steel reinforced with angle irons. Between the front and back plates there is an insulating mineral wool blanket one inch thick capable of withstanding a temperature of 1200° F. Observation and nozzle ports are equipped with pivoted cover doors controlled from the rear of the shield. Anchoring chains are provided for securing playpipes in place. The wheel carriage is bolted to the shield body. The shield is 79½" high by 75¾" wide overall.

CLEANS AIRCRAFT OIL REGULATORS

Turco Standard Washer has been placed on the market by Turco Products, Inc., Los Angeles and Chi-

cago, who state it is a new and improved machine for thorough cleaning of aircraft oil temperature regulators. It cleans two oil regulators simultaneously. New machine removes flake carbon, metal cuttings and other foreign particles by a surging action which pushes and sucks the cleaning solution through the interiors while regulators are being turned and

(Continued on page 140)



"YOU CAN LEAD A HORSE TO WATER"-

Stubborn, some horses. But intelligent, too!

That's why we say the fellow who really uses the brain he was born with . . . has "horse sense."

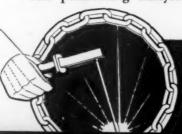
We think many of our customers, who know that welding is a metallurgical problem, show that kind of judgment by insisting on McKay Shielded-Arc Welding Electrodes. Because the solution to metallurgical problems starts in the laboratory . . . with microscopes and test tubes and painstaking analyses. McKay Electrodes

come from the "researched line" . . . the only line, to our knowledge, developed in a great nationally known research institute.

And men who specify McKay Commercial Chain (and McKay Tire Chains for their automobiles, too) show good judgment in buying the product evolved over 60 years of manufacture since the days when chain was sweated out over a simple blacksmith's forge.

We like "horse sense."

GENERAL SALES OFFICES: YORK, PA.



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PITTSBURGH, PA

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS







M.S.A. Faceshields provide protection, durability, and outstanding wearing ease in every job where light flying particles endanger or discomfort the worker. Three-way, fully-adjustable headgear is preformed to natural head shape—with top strap supporting weight of assembly. Clear cellulose acetate visors in 4", 6" and 8" lengths; .020", .040" or .060" thickness are available. Also, light or dark green visors .020" thickness. Model shown has full sparkshield; semi or nosparkshield models are also available (see illustration below). Write for descriptive Bulletin CE-23!

THREE HEADGEAR MODELS



Type "F"

Type "S"

Type "N

MINE SAFETY APPLIANCES CO.

BRADDOCK, THOMAS AND MEADE STREETS
PITTSBURGH, PENNA.

District Representatives in Principal Cities

(Continued from page 138)

PROMOTE PLANT SAFETY

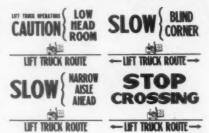


ILLUSTRATION shows series of four safety signs for placement along factory truck routes, being distributed by the Towmotor Corporation, 1226 East 152nd St., Cleveland 10, Ohio. The size of the signs is 14" by 22" thus permitting easy display without visual interference, and providing ample warning for lift-truck operators and pedestrian employees.

NEW MOTOR GENERATOR



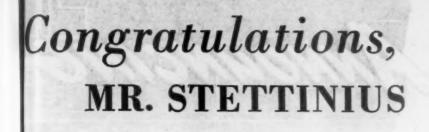
NEW Model motor-generator is announced by the Electric Indicator Co., 110 Parker Ave., Stamford, Conn. The new model L32 operates on 6 v dc input (12, 24, or 115 v dc input available). Ac output, 1, 2, or 3 phase, varies with the speed. It is claimed that speed is controlled within 1% for 25% variation in input or load, and that the generator will deliver 27 v., 2-phase ac at 2400 rpm. The unit is 6½" long, 2" diameter, weighs 32 oz., and is base mounted.

3-TON HY-LIFT TRUCK



NEW 6000 lb. capacity Hy-Lift truck, known as Type H-3, is announced by the Baker Industrial Truck Divn. of the Baker-Raulang Co., 2168 West 25th St., Cleveland 13, Ohio. It is termed a two-purpose truck. It picks up and carries skidded loads, thus fitting into low-lift truck systems. In addition it lifts loads several feet or higher; is useful for tiering, and will place loads on highway trucks or boxcars from the ground level.

(Continued on page 144)



Tennsylvania Salt Manufacturing Co.,
Manufacturing Chemists.
Widener Building

President

September 25, 1943

Mr. Edward R. Stettinius, Jr. Lend-Lease Administrator Washington, D. C.

Dear Mr. Stettinius:

We congratulate you on the splendid work you are doing in your important responsibility. Through the highly operation with the other Lend-Lease organization in condustrial and food supplies are helping to defeat the

While our opportunity to help is somewhat limited, we do get a great deal of satisfaction from the knowledge that some of our products are performing a vital service. Our metal cleaners. for instance, are in widespread use through some of our products are performing a vital service. Our metal cleaners, for instance, are in widespread use through and much other essential equipment. Actually billions of speeded in production by Pennsalt Cleaners.

This is, of course, but a secondary role in the great program of Lend-Lease -- but we appreciate the opporing in its success.

Yours for Victory,

Temara J. Beale



OFFICIAL O.W.I. PHOT



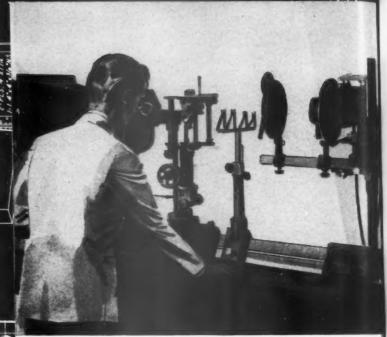
-6"# pin\ 2-10" #x ½" washers 2-4" # nuts

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134

-2-10" * x ½ washers 6" * pin 2-4" * nuts

ANNOUNCING.



Metallurgical studies form an important part of the investigations of the behavior of fasteners under various service conditions.



A broad and thorough program of technical exploration, sponsored by the Institute, employs the facilities of outstanding technological laboratories.

a program to help you use

(Bolts, Nuts, Rivets, Screws)

More Economically

More Effectively

Sponsored by the American Institute of **Bolt, Nut and Rivet Manufacturers**



The basic dependability of Fasteners has led to their use wherever reliable connections are needed. Keeping abreast of engineering developments, makers of

these products have con-stantly improved and refined the various items in their lines, making use of advanced metallurgical and precision manufacturing processes. As a result, higher strengths, closer tolerances, better finishes, etc. are available to engineers and manufacturers using bolts, nuts, rivets and screws.

To acquaint you with these advances, and to help you make fullest use of the products of the Fasteners industry, the Institute is sponsoring an informative campaign. New engineering data, application information and product developments will be spotlighted in this activity.

FACTUAL DATA BULLETIN

One of the primary features of this activity will be a bulletin "FASTENERS" to be issued at regular intervals. It will contain authoritative and useful data and ideas that will help you make best use of fasteners. We will

be glad to send it to you regularly at no cost if you are interested in learning more about the ever widening applications and possibilities of bolts, nuts, rivets, screws, and other headed and threaded products.



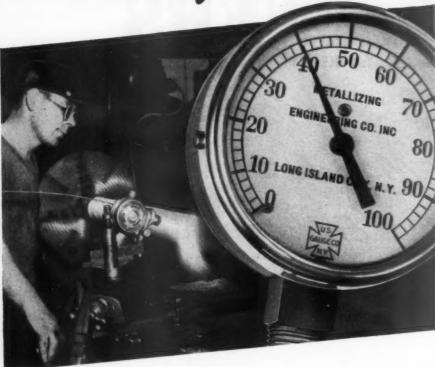
American Institute of Bolt, Nut and Rivet Manufacturers

1550 Hanna Building · Cleveland 15, Ohio



METCO Means Power to Spare

with half the air!



METCO Metallizing Guns keep spraying when pressure drops to 40 p.s.i.



Ready — the first real Metallizing Handbook

KNOW - HOW is as important to successful metallizing as equipment, and METCO provides the best of both. Packed in the carrying case with each METCO Gun is a copy of this new, 80-page Handbook on every phase of metallizing-together with a complete Gun Instruction Manual. Extra copies of the Handbook can be obtained for the nominal charge of \$1.00.

DOES YOUR metallizing gun operate inefficiently when the compressed air supply is used heavily elsewhere in the plant? Does it even stop completely? In either case, it is costing you time and money. METCO Type E or 2E Guns never require more than 65 p.s.i. . . . and will operate efficiently at pressures as low as 40 p.s.i.

Even without fluctuating air pressures, metallizing equipment which demands 85 p.s.i. is costly. High pressures mean greater air consumption . . . more horsepower . . . larger compressors. Conserve vital power and equipment! Get maximum economy and operating efficiency in every respect—by specifying METCO! Write for particulars, prices and priority data.

METALLIZING ENGINEERING COMPANY, INC.
38-18 30th Street Long Island City 1, N.Y.
In Canada: B. W. Deane & Co., Ltd., Montreal



WORLD'S FINEST METALLIZING EQUIPMENT

(Continued from page 140)

ELECTRO-MAGNETIC SCALE





"Magna-Pointer" held at zero before timing interval. fewe

Arm

many







"Magna-Pointer" instantly stalls at end of

ELECTRO-Magnetic clutch pointer scale originally developed by The Kron Co., Bridgeport, Conn., to provide a means of direct indication of the rate of flow of fluids such as aircraft engine fuel or lubricating oil, is also said to be ideal as an automatic tare device, and it provides means of accurate compounding of chemicals such as pharmaceuticals or plastics. Device consists of an electro magnetic controlled clutch on which is mounted a secondary pointer. This is mounted in the center of the dial glass directly in front of the weigh pointer. The secondary pointer can be engaged or disengaged with the primary or weigh pointer by means of an external control of the electric circuit which operates the electric magnet. External control can be either an ordinary toggle switch or an elaborate interval timer or other switch gear. The electro-magnetic clutch can be applied to all styles of Kron industrial dial scales.

DETERGENT LUBRICATING OIL FOR DIESELS

DEVEL-OPMENT of a new detergent type lubricating oil which will, it is claimed, reduce

wear and assure engine cleanness and oil stability for low speed Diesel engines, is announced by Standard Oil Co. of Indiana, Chicago, Ill. The new oil, it is said, will prevent ring-sticking, piston

(Continued on page 146)

LEGIBLE STENCIL MARKING delivers the goods...



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Crates, boxes, barrels, packages... any kind of shipment gets delivered quickly when the address is stenciled. Clear, bold, permanent stencil markings expedite handling

of your shipments. Stencil markings are easy to read... fewer chances for mistakes. That's why America's Army, Navy, and War Plants use stencil marking for addressing shipments, identifying parts and for those many other uses where legibility of marking is desirable.





MARSH STENCIL MACHINE with LIFE-TIME dies

Marsh is the only stencil machine made that uses hardened and ground dies and quick replacable punches. Each individual set is hand fitted for maximum cutting accuracy and to insure sharp, bold stencil markings. All Marsh machines are carefully constructed with modern equipment and meet Government specifications which specify three sizes...½", ¾" and 1". Find out today about the *modern* way to mark your shipments. Send us a card. No obligation.

MARSH

MARSH FOUNTAIN BRUSH, OIL BOARD, FELT TIP MARKER AND STENCIL INK

FOUNTAIN BRUSH: Balanced weight for marking stencils in 3 seconds time. Pays for itself in 3 days.

STENCIL INK: Clean, sharp, permanent markings in black, red, white, blue, yellow and green.

OIL BOARD: Oil impregnated. Does not absorb ink. One stencil can be reused for 2000 markings.

FELT TIP MARKER: As easy to use as a pencil. Makes permanent markings on wood, cartons, paper, stone, metal.

WRITE ... WIRE ... OR PHONE



MARSH STENCIL MACHINE CO. 57 MARSH BLDG. BELLEVILLE, ILL.

Novi



A better heat-treating method, developed in our own shops, together with an improved steel, have resulted in more uniform and sharper blades . . . so greatly improved that they are equal or superior to 18-4-1 High Speed Steel on any job!

Fast cutting, shatterproof, and unbreakable under excessive pressures and shocks, it is more than ever the blade for insuring trouble-free production on your automatically fed hacksawing machines. It will pay you to specify MILFORD FLEXIBLE REZISTOR by name.

Hand Sizes Have Easy-Starting Teeth

THE HENRY G. THOMPSON & SON COMPANY

NEW HAVEN, CONNECTICUT

also manufacturers of Milford Profile Saw . . . THE blade for all contour and profile band saw machines.

custing, and excessive sludge and gum deposits. The detergency results from the use of an additive which is both a detergent and an exidation inhibitor.

(Continued from page 44)

SAFETY BOX TYPEHOLDER

Improved design safety box type holder for marking purposes is announced by M. E. Cunningham Co., 115 E. Carson St., Pittsburgh 19, Pa. Holder can be designed for marking round or square pieces either hot or cold. Unit has reinforced outer box to which handle is welded. Steel type holder rides freely but is held in place by special shepherd hook pin. Holder is said to be made of one-piece safety steel to resist spalling and mushrooming. Can be made in numerous sizes and number of characters.

HIGH SPEED SPUR GEARED CHAIN HOISTS

NEW LINE of high speed, spur geared chain hoists in capacities of ¼ to 2 tons lifting capacity, is announced

by the Budgit Chain Block Division of Manning, Maxwell & Moore, Inc., Muskegon, Mich. The line is being marketed under the trade name of Budgit Chain Blocks. ¹/₄ and ¹/₂ ton lifting capacity hoists weigh 48 lbs.; the 1-ton hoist weighs 59 lbs., and the 2 ton hoist weighs 81 lbs. Design incorporates spur gearing, anti-friction bearings on all shafts, roller type lift chain. Chain guide prevents the hand chain from gagging or fouling the wheel.

PLASTIC INSULATING GROMMETS



NEW line of 100% phenolic plastic insulating grommets is announced by the Creative Plastics Corp., 970 Kent Ave., Brooklyn 5, N. Y. The grommets are available in four standardized sizes, and were

developed especially for use by radio, motor and electronics manufacturers. Holes are concentric, corners chamfered, and all threads are clean and lubricated. To promote easy gripping all parts are matte finished. Samples available.

ANNOUNCE "CONTROLLED" PLASTIC MATERIAL

WHAT is said to be something entirely new in plastic, bearing the tradename Emeloid, is announced

by the Emeloid Co., 287 Laurel Ave., Arlington, N. J. It is claimed to be a "controlled" plastic, and that it is possible to obtain in this new plastic hardness, softness, elasticity, toughness, freedom from magnetic attraction, etc., or a combination thereof. Emeloid can be had in clear or assorted colors. It can be formed. molded, shaped, cut, sawed, punched, etc., lithographed and printed. It is light in weight.

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POOR COMMUNICATIONS COST 2000 LIVES

What about Ours Today

THE unnecessary war of 1812 was declared two days after Lord Castlereagh announced in England that the "Orders in Council" (which caused the quarrel) would be repealed—but the Congress of 1812 didn't get the news in time.

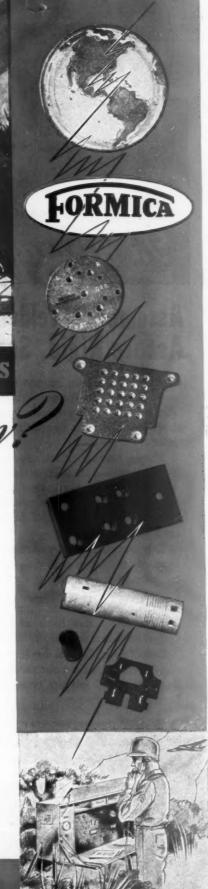
The final battle of New Orleans, costing 2,000 lives, was fought fifteen days after peace was signed at Ghent—but the armies hadn't heard the news.

Today news, propaganda, and battle orders can girdle the globe in a second if communications equipment is functioning perfectly.

Radio parts made of Formica help civil and military communications function perfectly because of Formica's excellent insulating qualities at radio and audio frequencies. In addition, Formica is light, strong, tough, moisture resistant, and readily machined. A material possessing such properties will have many new uses in the close knit world of tomorrow, some uses in your product no doubt.



THE FORMICA INSULATION COMPANY



NOVE



Assemblies Welded with AMPCO METAL **Assure Rigid, Safe Construction**

Coated aluminum bronze welding rods, made from Ampco Metal and known as Ampco-Trode electrodes, were used in the construction of many newly designed 36-foot aircraft rescue boats because the high strength values of the rod assured a rigid weld joint.

These rescue boats, designed to pick up aircraft crews who have crashed at sea, must often buck high waves-strength in each part is imperative. Here the propeller shaft stern tube of manganese bronze is welded to the hull plate of aluminum bronze to form a rigid fabricated unit which resists vibration

The acceptance by American Industry and Government contractors of Ampco Metal in various forms is based on proven performance by leaders in aircraft, machine tool, ordnance, and heavy machinery fields. Ampco Metal is daily rendering valiant service. With outstanding physical properties, this aluminum bronze alloy has high strength, controlled hardness, and corrosion-resistance-vitally needed for specialized service.

Test Ampco Metal under actual operating conditions and get results that justify your judgment. Ask for "File 41-Engineering Data Sheets," giving case histories and technical information. Sent free on request.



(Continued from page 146)

molded, shaped, cut, sawed, punched, etc., lithographed and printed. It is light in

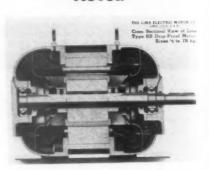
NEW VERTICAL MILLER



NEW model 2-20\ vertical miller is announced by the Kent-Owens Ma-Kent-Owens chine Co., Toledo, Ohio, Table is 42" long by 12" wide with 20" travel, having a fully automatic cycle. It can be fed or rapid tra-

versed in either direction, automatically shifted from rapid traverse to feed in either direction, and automatically reversed at both ends of the stroke. It may be automatically stopped at any desired point in its travel.

DRIP-PROOF INDUCTION MOTOR



ABOVE illustration shows longitudinal cross section of an RS drip-proof induction motor, developed by the Lima Electric Motor Co., Lima, Ohio. The unit is built in sizes from 1/2 to 75 hp, 2 or 3 phase, ac current. It is designed to afford maximum protection against chips and filings, dripping or splashing liquids. Manufacturer says it adaptable to machine tools and production equipment. canneries, paper mills, and other locations where a totally enclosed motor is not especially needed.

METAL-SAVER LUMINAIRE



METAL-saving Fluorescent luminaire is announced by Commercial Metal Products Co., 2251 W. St. Paul Ave., Chicago. Non-metallic reflector has a baked-on white glazenamel reflecting surface, and baked on gray enamel exterior. Ballast is mounted on the outside of the pressed steel wire-way for cooler operation. Four models are offered: 2-40 watt; 3-40 watt; 2-100 watt, and 4-100 watt lamps using special four-lamp ballast.

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Picking up your receiver can produce results faster than picking up a pencil. And when "results" means the prompt delivery of parts or supplies on which your full-scale production depends, you'll find it pays all ways to telephone your Industrial Supply Distributor first.

Because-minding his business means keeping his mind on your business. Your Distributor knows what materials you must have to keep your operations on schedule. He orders ahead from the factory for you and for all his other customers. He buys on priority-he buys as much as he can-he buys as often as he can.

Co-operate with your Industrial Supply Distributor-check with him ahead of your needs -give him opportunity to co-operate with you. It's good strategy on the home industrial front - in wartime and every other time.



TWIST DRILL COMPANY 1242 EAST 49*STREET CLEVELAND





"I like Threadwell Taps because they have polished flutes which speed chip removal and help prevent tap breakage. It's a fea-ture that I do not find on all taps."

blue for precision ground."

"I like Threadwell Taps because of their greaseless rust-proofing They are clean to handle and there is no grease to collect dirt. A Threadwell Tap arrives as dry and shining as a piece of fine cutlery."

I like Threadwell Taps because every ground thread tap is packed in a fransparent plastic container with a metal screw cap. This insures its safe arrival on the job and makes it easy to identify the size and style without unwrapping."

The popularity of Threadwell Taps is due to these things in part, but principally it is due to their fine performance on the production line. In war plants from coast to coast they are setting new performance records every day.

If you have not "discovered" Threadwell Taps, get in touch with your Threadwell distributor. You will find him ready to help you with your threading problems.

> EXPORT STOCKING DISTRIBUTORS CAHADA: Bridge Machinery Co., Mon BNBLAND: Skyluz Ltd., London



NEW LUBRICANT REPLACES THREE TYPES OF OIL

Development of an all-purpose lubricant for automatic screw machines used in the manufacture of bullet cores by Willys-Overland Motors, Toledo, Ohio, has saved 50,000 gallons of oil for our armed forces during the past three months, it is said.

Use of the new "triple-threat" lubricant has also reduced by 40 per cent the man hours previously expended in oil handling, according to Marvin J. Alef, manager of the Toledo core plant, although the output of the screw machine units in that period was stepped up 23 per cent.

Devised by engineers of the Jeep firm in collaboration with leading chemists in the oil industry, the all-purpose liquid replaces three different types of oil-gear, cutting and concentrated-formerly needed to operate the screw machines, he said.

Prior to the preparation of the oil, he explained, each of the company's machines was losing approximately five gallons of gear lubricant daily through leakage into the oil used to cool the machine's cutting implements. The resultant mixture then required the addition of concentrated oil to render it reusable for its cooling function.

Mr. Alef pointed out that the division will show greater oil savings in the present three-month period owing to the recent installation of additional screw machines for .30 calibre core production.

1 1 1 FLAG COLORS OF UNITED NATIONS AND SOUTH AMERICAN REPUBLICS

At the special request of the Quartermaster General of the War Department, The Textile Color Card Association has just compiled, for the use of this Department, as well as other branches of the Government, a standard reference of the authentic flag colors of all the United Nations and the South American Republics.

The majority of the flag colors are found in the Ninth Edition of the Standard Color Card of America, issued by the Association, while others appear in season cards and in the United States Army Color Card, showing the Official Colors for Arms and Services, issued by the Association and approved and accepted by the Quartermaster General of the United States Army.

One copy of the book will remain at the Philadelphia Quartermaster Depot and another in the War Department at Washington. A third copy is on file at the Association's headquarters for reference and use by its members.

ITALY, U.S. A.

Believe it or not, both Italy and Sicily are in the United States. The first is a town in Texas; the second is an Illinois community.

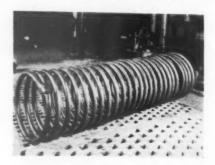
In fact, quite a number of American cities and towns bear names that have come sharply to the attention of the American people during the invasion of Italy. For example, a Rome is to be found in eight states, while there are nine DWELL TAP AND DIE CO., GREENFIELD, MASS., U.S.A. Naples, including two in California. One

can find Genoa in ten states, Milan in Turin in three and Venice in seven.

Here is proof of the multiplicity of names of our cities and towns and the fact that they are duplicated in so many states. This gives point to the appeal of Railway Expressmen that in writing addresses on packages to be shipped, the "state" be written out in full. The reason is that abbreviations may be misread and the shipment go to the right town, but in the wrong state. Send Christmas shipments by December 10!

USES DIESEL EXHAUST PIPES TO FURNISH OFFICE HEAT

True American ingenuity recently was displayed by J. C. Lieb, president of the Baltimore Cold Storage Company, when



Tightly coiled pipes utilize Diesel exhaust to heat water

he found his concern confronted with a serious problem caused by the eastern oil shortage.

Lieb had enough oil in his quota to run his big Diesel motors and produce cold, but not enough left over to heat the building this winter and keep his employes warm.

Lieb gave the matter of heat and cold considerable thought and finally came up with a solution. First, he installed tanks around the exhaust pipes of his motors; then he filled the tanks with tightly coiled water pipes using wrought iron because of its easy bending qualities and resistance to corrosive gases. Thus, while the big Diesels are busy producing cold, their hot exhaust pipes are busy preheating water to reduce the fuel consumption of the hot water heating system of the building.

Lieb reports the system works, and suggests it to others with similar prob-

NEW BORIC ACID FUSE

SPEE

faste

For outdoor power systems a new weather-protected intermediate duty boric acid fuse which interrupts the circuit to the faulted equipment, and isolates the fault from the feeders with a complete 180 deg. air break is announced by Westinghouse Electric & Manufacturing Company. In the new DBA-1 fuse the blown fuse unit is dropped out of the circuit after the fault current is interrupted. There is no possibility of burning contacts or arcing between fuse tube and clips, or of any carbonized fuse parts breaking down to produce leakage or a second fault. It is applicable in utility and

(Continued on page 152)



SPEED NUTS have become industry's universal fasteners because:

- 1. They do not shake loose with vibration.
- 2. They reduce weight and conserve critical metal
- They are applied faster and conserve war manpower.
- 4. They lower net assembly costs.

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INNERMAN PRODUCTS, INC. • In Canada: Wallace Barnes Co., Ltd., Hamilton, Ontario

Month after month, tons of critical material and countless man hours assembly time are being saved by conversion to spring steel SPEED NUTS. The faster this conversion is expanded the quicker SPEED NUTS will pay you even bigger dividends. In writing for samples, kindly give engineering details to expedite quick selection of SPEED NUT adapted to your needs.

2050 Fulton Road, Cleveland, Ohio

In England: Simmonds Aerocessories, Ltd., London

(Continued from page 150) industrial high voltage power systems for protecting power transformers, feeder-circuit sectionalizing, distribution transformers, high voltage capacitors, and potential transformers.

NEW SYNTHETIC RUBBER SEALING COMPOUND

Development of a compound made from Ameripol, the synthetic rubber created in its laboratories which will remain so flexible at —70 degrees Fahrenheit (70 degrees below zero) that it can be bent at an angle of 90 degrees around a half-inch rod is announced by the B. F. Goodrich Company. The new compound is being

used in the construction of bolted tanks for storage of the high octane gas and aromatic fuels used in military aircraft.

In the construction of these tanks, made from sheet metal, sealing strips of the synthetic rubber 13/4 inches wide and 3/32 inch thick are placed at the points where the sheets are bolted together. Half inch bolts are used to squeeze the synthetic rubber tightly between the plates, assuring a perfect fuel-tight seal.

BEARINGS REQUIREMENTS STUDIED

A group of consultants drawn from the Anti-Friction Bearings Industry has been formed by the War Production Board to resurvey essential wartime requirements for bearings and to study the volume of individual purchase orders in relation to these requirements. These WPB consultants are a part of the Anti-Friction Bearing Section of the Tools Division, War Production Board.

They will meet at frequent intervals to discuss and advise on problems in the supply of anti-friction bearings and to investigate and take action to correct any instances of over-purchasing or excess inventories. The production and distribution of anti-friction bearings is covered by General Preference Order E-10. The order defines an anti-friction bearing as any bearing employing as rolling elements, balls of any size or rollers of any size or shape.

RESIN GLUE AND WOOD PROVIDE GIANT SPANS

The team of resin glue and wood, rapidly ringing up new first uses in varied fields of the war effort, is currently speeding the completion of essential military structures in spectacular roofing construction by Timber Products, Oakland, California.

Fabricated and erected by this firm's Summerbell Roof Structures Division,



Giant Laminated Spans

giant laminated wood span trusses are being used extensively for roof supports, according to reports from the West Coast. On one unusual job of recent date, several three-hinged arches, with each section made up of thirty-seven ¾" x 8" boards, were stretched without support from groundlevel to groundlevel for over 117 feet, with a rise of 44 feet. These span arches, which measured 7" x 27½" in cross-section, are thought to be among the largest ever built of glue-laminated wood.

For all laminating of these arches the fabricator uses a type of Plaskon Resin Glue manufactured by the Plaskon Division of the Libbey-Owens-Ford Glass Company.

Most important feature of the laminated wood arches is said to be their permanent strength. Because of the waterproof and weatherproof qualities of the glue and its complete resistance to fungi, bacteria and mold, an unbreakable bond is maintained between the wood laminations under all conditions. The resin glue has proved itself to be stronger than the wood itself—in shear tests the wood shatters first leaving the glue line intact.

1 1 1 USE FIBRE FOR FORMING PLUGS

Fibre has been used to replace tool steel in the making of plugs used in forming

(Continued on page 154)



★★★ If your shipping room's stencil cutting machine needs repair, your nearest Diagraph-Bradley distributor will lend you a machine while our factory puts your equipment in tip-top order.

Our experts overhaul all makes and models. If you need a new machine, we can make immediate shipment, in letter sizes from \(\frac{1}{2}''\) to 1\(\frac{3}{4}''\) to firms with high priority ratings.

Complete Shipping Room Supplies

Diagraph-Bradley non-settling, non-clogging, stencil Ink, Stencil Board, Fountain Brushes, Fountain Markers.

Distributors in principal cities. See phone book or write Diagraph-Bradley Stencil Machine Corp., 3750 Forest Park Blvd., St. Louis, Mo.







and they will deliver the full length of service that has been built into them. To help you, Roebling has assembled a wealth of conservation data and boiled it down on a 4x5 inch tag that can be fastened right to the equipment. Printed in two colors and varnished to stay clean, it's a convenient way to remind and instruct operating men about such vital precautions as: Proper Installation,

Correct Spooling, Proper Use of Clips, Regular Lubrication, Frequent Inspection and Careful Operation. Copies are yours for the asking, Write our nearest office and specify Tag "A".

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

NOVE



Mention any one of today's new metals, alloys, ply-woods, plastics—any one of 100 different materials—and we'll name you the DoALL Band Saw that cuts it in the shortest time and gives a finish so smooth that further machining may not be necessary.

DOALL

DAILY RECORDS

Below are given the number of lineal inches of six staples \(\frac{1}{4}\)" thick that can be cut per minute when these better saws are used at the specified speeds:

TOOL	STEEL									4	11	/2	to	10	Lineal	Inches
COLD	ROLL	ED S	H	EE	L		 	 				9	to	12	Lineal	Inches
HIGH	CARB	ON	S	ΓE	E	L		 		4	31	14	to	10	Lineal	Inches
CAST	IRON													16	Lineal	Inches
ARMO	OR PLA	TE										8	to	10	Lineal	Inches
STAIR	ILESS	STEE	L									3	10	5	Lineal	Inches

DoALL Band Saw users are given a real aid, the DoALL Job Selector Dial, which shows instantly the proper saw and speed for more than 150 materials.

Research Laboratory founded for your FREE USE



Here's a clinic for sick sawing jobs. Send in sample of the material you're having trouble with. We'll put it through scores of tests and give you a written report of results and recommendations. Or, consult the DoALL man in your locality who can give you helpful advice on your problems right in your own plant.

A Mighty Interesting Book—Tells about the finest Band Saws made and their uses on many special test jobs. Well illustrated and worth seeing. Write for copy today.

THE DOALL COMPANY

1214 Thacker St., Des Plaines, III.

DoAll Offices in 34 cities, with a staff of trained engineers to give quick service on DoAll Band Saws and Files, Contour Machines, Gage Blocks and Surface Grinders.

(Continued from page 152)

end windings for small instrument-type motors in manufacture at one of General Electric's plants. The fibre, because of its resilience, was found to offer excellent resistance to wear and to have less tendency to short circuit the end turns of the stator windings. As a result of this change, demand for a critical material has been decreased, while half the cost of the forming plugs has been saved because of lowered material and processing cost.

ALL-PLASTIC TIRE VALVE CAP

Plastics have found another new application in a new all-plastic valve cap which is said to seat perfectly and hold air up to 400 lbs. pressure without the need of washers. The cap is molded in one piece, and according to the Lacey-Webber Co., Kalamazoo, Mich., manufacturers, it withstands abuse on equal terms with metal caps. It has an unthreaded "finder skirt" which makes for easy application, wide knurled band for firm gripping, and domed head which provides adequate clearance of the valve core pin.

9 9 9 SYNTHETIC RUBBER USED FOR PUMP GEARS

Synthetic rubber is again proving itself under actual conditions of war with the announcement by United States Rubber Company that certain types of marine pump gears formerly made of metal are now being made of the new product, for installation on landing boats. The cutting action and wear which sand and other foreign matter formerly had on metal gears has been eliminated due to the abrasive-resistant qualities of synthetic rubber.

1 1 1 ARMY DRUG BUYING

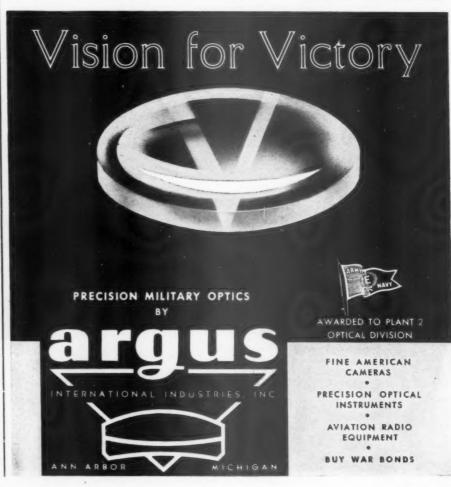
Purchasing of drugs and medical supplies by the War Dept. is being centralized in the New York procurement district, 52 Broadway, N. Y. C., where the work is being transferred from the St. Louis medical depot, a department spokesman announced.

The move does not involve any changes in procurement policies or methods, but is being made solely in the interest of more efficient operation. The medical depot in St. Louis will be continued.

WAR PRODUCTION IN REGION NO. 1—NEW ENGLAND

Here's how New England, Region 1 of W.P.B. has met the challenge of Hitler and Pearl Harbor. In an area comprising only 2.3 per cent of the country, and with 6.4 per cent of the population, the New England states are building more than 15 per cent of the ships sliding down the ways today; 25 per cent of the machinery and electrical equipment; 23 per cent of the clothing and textiles the armed forces

(Continued on page 156)



IG



This aircraft carburetor bolt was originally made on screw machines. Unable to secure the required quantity, the contractor tried having it upset by the hot heading method, but this process was not satisfactory in forming the head to the required tolerance.

We developed a cold heading method, which consists of forming a round head and milling the hex. The shank was required to be smooth, free of cracks or circular grooves, and our method proved more satisfactory than the screw machine method in attaining this result.

By eliminating the tedious operation of milling from the bar, we stepped up the production rate to the quantity needed, released critical screw machines for other work, saved man power, reduced costs, and effected a reduction of 76 per cent in material used.





THE NATIONAL SCREW & MFG. CO., CLEVELAND, O.

NOVEM

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Saving TIME, MONEY-Possibly LIVES

YOU'LL BE ASTONISHED at the speed and economy with which these Metalite Cloth "Gadgets" do slow, costly little metal finishing jobs. The accuracy of finish or radius produced by them on many vital parts also contributes to the eventual performance and safety of the whole.

Honestly, now, have you <u>fully explored</u> what these many little abrasive cloth forms can do for you right on tools now in use in your plant? Have you had a Behr-Manning Field Engineer show you all the shapes and sizes—even demonstrate them on the jobs you select?

Concerns such as those who supplied our illustrations have made great savings by adopting "Gadgets" as the principal means of doing the most irritating kind of finishing operations—irritating because the time consumed formerly was so out of proportion to their size.

Write direct to Troy or our nearest Branch for the services of one of our able Field Engineers.

Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Tacoma.

BEHR-MANNING · TROY, N. Y.

IDIVISION OF NORTON COMPANY



(Continued from page 154)

need, and a heavy proportion of the machine tools that were so critical a year ago.

In round figures the New England states are working on \$9,687,000,000 in war contracts or 21.1 per cent of the national total.

NATIONAL STARCH PRODUCTS IN NEW HEADQUARTERS

National Starch Products Inc.'s executive office and research laboratories, which for the past 18 years have been located in the company's 6-story building at 820 Greenwich Street, New York, will move "uptown" to new and more spacious



New Home of Executive Offices National Starch Products

quarters about November 15. The new headquarters, comprising 24,000 square feet of floor space, will occupy the entire ninth and tenth floors of a modern steel and concrete 23-story building at 270 Madison Avenue, corner of 39th Street.

Increasing demands of war industries, together with a steady expansion in the scope of National's activities during the past decade and a desire to provide for post-war plans, are the chief factors governing the company's need for more space. An estimated 90 per cent of the current production of its four domestic plants is for lend-lease, military, and essential civilian requirements.

TUNG OIL PRODUCTION SHORT

Tung oil output in U. S. expected to reach 6,500,000 pounds in 1943 from dried fruit of the 1942 crop, says advance digest, April 28, of article by C. C. Concannon, head of Chemical Unit, Bureau of Foreign and Domestic Commerce, in "Domestic Commerce". While far greater than the 2,300,000 pounds of domestic tung oil produced last year, and the 3,533,000 pounds reported for 1941, based on reports of 11 crushers to the Bureau of the Census, the 1943 expectation is well below earlier optimistic estimates which ran as high as

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NOT "DER TAG" BUT "THE DAY"

There is a great day coming when, in the words of Kipling, "The silence will be that heavy, one is 'arf afraid to speak." That will be the day of unconditional surrender when those blazing guns, and all guns, will be silenced. * * * * Now, it is full speed ahead for each of us. For Leland it is full speed ahead in the production of alternators to power portable gasoline plant for field radios, alternators to power electronic devices on land, sea and in the air; adjustable speed AC to DC units for airplane instrument test stands, polyphase motors to control fire of anti-aircraft gun; DC motors to operate plane landing gear; dynamotors to power radios on motorized vehicles; jeeps, tanks; and other equipment. For the duration Leland's output is largely earmarked for delivery to the armed forces. * * * On that day of unconditional surrender it will be full speed ahead on the production of post-war designs. Our solution of the many motor problems now confronting us will obviously benefit peacetime motor buyers and we will be able to remember old friends and new ones with a quality product and a brand of service far ahead of anything that ever went before.

THE LELAND ELECTRIC COMPANY * DAYTON, OHIO





Purchasing Agents Too Can Speed Production

By standardizing on these Positively Unbreakable hack saw blades that permit all hack sawing machines to operate at maximum speed and maximum feed, you can increase the output of every hack saw in your plant. In MARVEL High-Speed-Edge Hack aw Blades the fastest cutting, longest lasting cutting edge has been welded to a body of tough alloy steel. This composite construction gives strength to stand up to any load, and assures that each blade will last the full life of its cutting edge. Buy MARVEL High-Speed-Edge Hack Saw Blades from your local industrial distributor.

ARMSTRONG-BLUM Mfg. Co. "The Hack Saw People"

5700 Bloomingdale Ave., Chicago, U. S. A. Eastern Sales Office: 225 Lafayette St., New York



STRETCHING AVAILABLE MANPOWER ---Wherever there's an Malndustrial Cleaning Job

That's your objective in buying cleaning materials. Not the cheapest cleaner you can buy, but the cleaner that does a better job with less use of available man-power.

That's why you should investigate

MAGNUS SPECIALIZED CLEANERS

for your cleaning operations, whether you use cleaners for metal parts, truck bodies, food equipment, plant floors, cafeterias and restrooms or for hand cleaning.

There are Magnus Cleaners especially designed for your cleaning operations which will not only help greatly in these days of man-power shortages, but do an all around better and lower cost job.

Let us know what your cleaning jobs are. If they are not discussed in one of the many Magnus Handbooks covering your industry, we'll make specific recommendations.

MAGNUS CHEMICAL COMPANY

Manufacturers of Industrial Cleaning Materials — Washing, Drying,
Pickling Equipment — Metal Drawing Lubricants .

99 South Avenue Garwood, N. J.

Service Representatives in Principal Cities

Magnus CLEANERS

(Continued from page 156)

8,000,000 pounds with some hope of 10,000,000 pounds. Severe frosts this year render 1943 crop of tung oil fruit prospects poor, with probable oil production from the 1943 crop of fruit (to be crushed in 1944) not more than half of what might be expected, says Mr. Concannon.

TRAILER UNIT FOR RECLAIMING LUBRICATING OIL

To "keep 'em rolling" at the Front, the Youngstown Miller Company of Sandusky, Ohio, has designed, built and delivered to the Marine Corps a mobile lubricating oil reclaimer for use back of the lines as the troops advance. Mounted



Mobile Oil Reclaimer

on the trailer, is a standard type Y-M Reclaimer, a Diesel electric generating set, clean oil storage tank, fuel oil tank, and waterproof storage bins for refinery earths, filter papers and spares.

In operation, a charging pump conveys the dirty oil from drums on the ground to the heating tank, where it is brought to a sufficient temperature in intimate contact with refinery earth to dissipate the volatiles.

The heating process is controlled by thermostats, and when the proper temperature is reached, the oil is dropped into a transfer tank, then forced through a two-stage filter by compressed air and out to clean oil receiving drums.

The reclaimers are built in eight sizes to meet any requirements for the purification of dirty lubricating oils from diesel, automotive and aircraft engines, as well as for hydraulic, vacuum pump, and transformer oils.

EXTRUDED PARTS FROM SYNTHETIC RUBBER

As an example of what can be done by development and research on synthetic rubber, The B. F. Goodrich Company announces that it has succeeded in making extruded parts from its Ameripol synthetic rubber which have a durometer reading of only 35—five points less hardness than any natural rubber compound the company has ever been able to successfully put through extruding machines.

Developed to meet the specifications of an aircraft manufacturer who is using it as a compressible sealing device between metal panels where there must not be the slightest air seepage, it has a tensile

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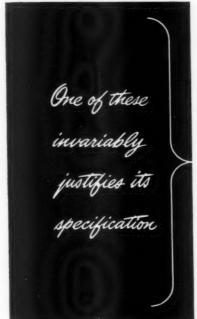
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HAZARD LAY-SET

Preformed REWARDS YOU BY-



- 1 LASTING LONGER
- 2 BEING SAFER TO HANDLE
- 3 SPOOLING BETTER
- 4 BEING FASTER TO INSTALL
- 5 REFUSING TO "PORCUPINE"
- 6 MAKING LANG-LAY MORE SERVICEABLE
- 7 BEING FREE OF TENDENCIES TO KINK
- 8 REQUIRING NO SEIZING WHEN CUT
- 9 RESISTING BENDING FATIGUE LONGER
- 10 GIVING YOU GREATER DOLLAR VALUE

Look closely at this discarded Hazard LAY-SET <u>Preformed</u> wire rope. See any protruding wires?... No—not one of those broken crown wires leaves its assigned place. They remain flat and in place because they are <u>preformed</u>. • This means safer, faster, surer handling by workmen. No vicious barbs that may cause blood-poisoning and compensation claims. Hazard LAY-SET <u>Preformed</u> instills confidence in your men; fewer time-out accidents; steadier production. • It also means longer rope service and fewer needless damages to your equipment. Specify Hazard LAY-SET <u>Preformed</u> for your next rope. It gives you greater dollar value.

HAZARD WIRE ROPE DIVISION, Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland, Tacoma AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT • CONNECTICUT



HAZARD LAY-SET



WIRE ROPE

Movement

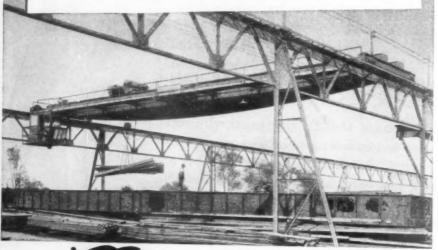
BEGINS AT HOME

The job of seeing to it that materials and supplies are at the right place at the right time is no less important on the home front than on the battle fronts. Industrial schedules *must* be maintained if war objectives are to be gained.

Shepard Niles has long enjoyed the reputation of manufacturing the most complete line of cranes and hoists in America. Because of this and because they are specialists, manufacturing *only* cranes and hoists, they are in a position to recommend the proper type of equipment for any materials-handling problem you may have.

Overhead Electric Traveling Cranes are made in either welded or riveted box girder construction, in capacities from 1 ton to 450 tons. Representatives in or near all war production centers are available for consultation to help you determine where important materials-handling economies can be made.

Write for descriptive literature.





462 SCHUYLER AVE. . MUNTOUR FALLS, N. Y.

(Continued from page 158) strength of 700 pounds, elongation of 700 pounds, can withstand cold down to 40 degrees Fahrenheit below zero without cracking.

Even after 48 hours immersion at room temperature in a solution of 85 per cent kerosene and 15 per cent benzene, the rubber shows only a 22½ per cent decrease in tensile strength and only 15 per cent in elongation.

Besides its application to aircraft, the new compound is expected to find many industrial uses where compounds having higher durometer readings do not compress readily enough to give a desired airtight or liquid-tight seal.

7 7 7 SALVAGING PAINT DRUMS OVERCHARGES

Many errors in rating and charging for movement of Empty drums, returned for refilling in the Eastern area are occasioned by failure to describe the carriers in the terms used in the Freight Classification "Drums, Steel, shipping (used) 24 Gauge"—or 26 gauge, as the case may be, says the National, Paint Varnsh & Lacquer Association. When so described these "Drums" are entitled to first class rates. Failure to indicate these are "old" drums with sides made of 24 or 26 gauge metal results in rating as New drums and computing charges at 1½ x 1st class rates by Rail—3 x 1st class by motor freight.

Claims for overcharges should be supported by citing—Supplement 6 (page 6, item 24), National Motor Freight Classification No. 6; or, for railroads, Supplement 18 (item 9265-A) Consolidated Freight Classification No. 15.

Never describe as "Kits or Pails". Kits or pails are containers of less than 5 gallons. Drums are containers of Five (5) gallons capacity or over, with or without bails. No. 15 CFC, Rule 40, Section 5; and No. 6 NMFC, Rule 5.

BASIC ELECTRICITY TEACHING AIDS FOR INDUSTRY

Fundamentals Of Electricity: a series of 12 "reading" or discussional type slidefilms, comprising a total of 888 special photographs, drawings, diagrams, charts and pictorial exhibits, now being widely used in the wartime training program in schools and colleges, has been made available to Industry generally by The Jam Handy Organization, 2900 E. Grand Blvd., Detroit, Mich. These are the slidefilms which have been correlated with the PIT (pre-induction training) program in connection with the High School Victory Corps Organization's course on the fundamentals of electricity. The purpose of the series is to speed up the training of apprentices in all fields of electricity, to save time and labor of instructors by giving basic principles more quickly through picture screen visualization. Each slidefilm is the basis for a single lesson or session. Titles are: 1. Magnetism. 2. Static Electricity. 3. Current Electricity. 4. The Electric Cell. 5. The Storage

(Continued on page 165)



STEELMAKING—If You Use Steel, You Should Know More About These Linde Methods That Help Produce Better Steel Faster . . .

In this picture, an acetylene generating plant at a steel mill is being supplied with Union Carbide. Large-capacity generator plants like this are a development of The Linde Air Products Company. The calcium carbide is automatically processed to form acetylene gas as needed. The acetylene is distributed at a predetermined pressure throughout the mill in pipe lines to operating stations where it is used.

Because the oxy-acetylene flame is one of today's most efficient mass-production tools, steel mills require such large quantities of acetylene that much of it is made in generators right at the mills.

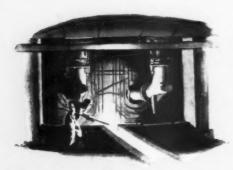
Shown in the following pages are some of the ways in which the production of steel is speeded by using the oxy-acetylene flame techniques and equipment developed by the Linde organization.

Similar Linde methods are saving time and materials in shipyards... in ordnance plants... in fact, in essential plants of every kind where metals are cut, formed, joined, or treated. They are methods that suggest over and over again the importance of keeping up to date on everything that has to do with the oxy-acetylene processes.

Through the Complete Cycle of Steel Production . . .

Linde Methods save time and materials

The engineering facilities of The Linde Air Products Company have been developed through many years to aid industry in adapting such methods as are illustrated here. These Linde facilities are importantly employed in helping to meet the specialized mass-production needs of today. When the time comes to switch your production facilities to work on automobiles . . . or tractors . . . or home appliances . . . or other things that all of us want . . . Linde's enlarged experience will be available to help speed the conversion.



FURNACE-TAPPING—By use of the oxygen lance to clear the tap hole, the opening is quickly made for molten iron to pour from the blast furnace. The oxygen lance also is used to tap open-hearth furnaces, and for heavy work like cracking "skulls" and piercing thick sections of steel.

DESEAMING—Where mechanized conditioning of steel is not feasible, or for use in secondary conditioning, oxy-acetylene deseaming with Linde's manually operated scarfing equipment is quick, economical, and effective. Other types of blowpipes are widely used for rivet cutting, for removing defects in castings, for other forms of gouging, and for scrap-cutting.

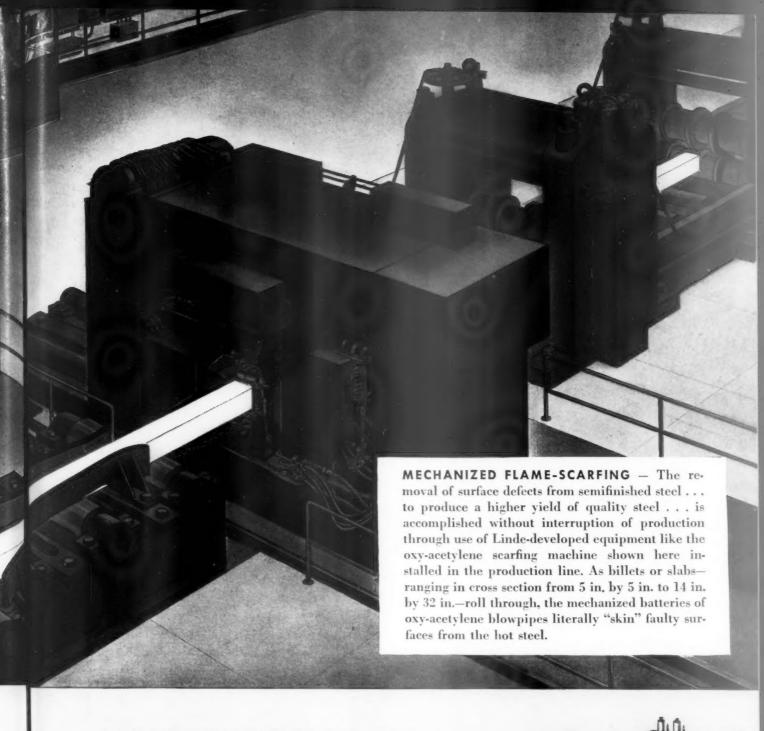


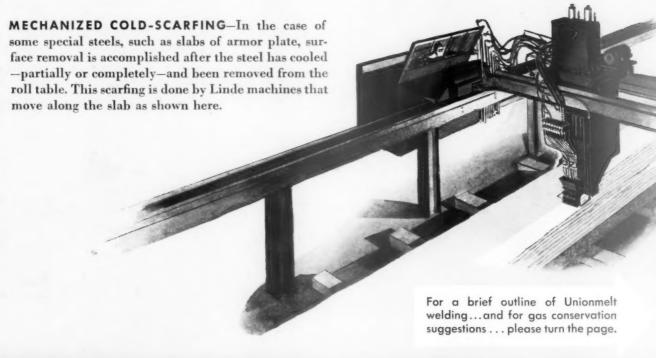
MECHANIZED BILLET-CUTTING — Flame-cutting machines developed by Linde are used in the production line to cut billets, bars, and rounds to length . . . several pieces at a time . . . quickly . . . economically . . . with no need for the massive, power-consuming machines that otherwise would be necessary.



MECHANIZED PLATE-CUTTING—Much of the steel plate produced must be cut to the correct size before it is shipped for further fabrication. Batteries of small oxy-acetylene cutting machines mounted on gantry cranes are used to speed this work... cutting large, heavy plates into as many pieces as required, in one pass.









Unionmelt Welding in mass fabrication

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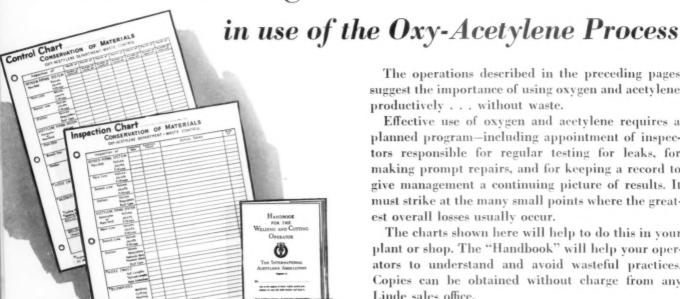
Unionmelt welding is a unique, automatic electric process that joins steel of any commercial thickness at high speeds. Welds are uniform because, once the controls are set by the operator, the work progresses automatically. The weld is made without flash, glare,

Shown here, Unionmelt welding is being used to fabricate spiral pipe. An oxy-acetylene machine is cutting the finished pipe to length.

Unionmelt welding also is an efficient mass-production tool in the fabrication of ships, combat vehicles, locomotives, pressure vessels, and many other types of heavy equipment.

The wide use of the Unionmelt process has been facilitated by Linde's flame-cutting equipment, which quickly trims steel to size and shape, ready for welding.

A Planned Program to Save Materials



The operations described in the preceding pages suggest the importance of using oxygen and acetylene productively . . . without waste.

Effective use of oxygen and acetylene requires a planned program-including appointment of inspectors responsible for regular testing for leaks, for making prompt repairs, and for keeping a record to give management a continuing picture of results. It must strike at the many small points where the greatest overall losses usually occur.

The charts shown here will help to do this in your plant or shop. The "Handbook" will help your operators to understand and avoid wasteful practices. Copies can be obtained without charge from any Linde sales office.



THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

20 E. 42nd St., New York 17, N. Y. Golfices in Other Principal Cities In Canada: Dominion Oxygen Company, Limited, Toronto

The words "Linde," "Union," and "Unionmelt" are trade-marks.

BUY UNITED STATES WAR BONDS AND STAMPS

(Continued from page 160)
Battery. 6. Electromagnetism. 7. The
Generator. 8. Alternating Current. 9.
Electric Motors. 10. Electric Meters. 11.
Applications—1. 12. Applications—2.

EVER BEEN BEATEN BY A DRUM?

This is the question National Adhesives asks their customers in an attractive, two-color mailing piece, which shows how to make metal drums last longer and which urges the trade to return empties (barrels too) promptly.

When opened to full size, this folder becomes a wall chart of recommendations for the care and handling of drums.

National sums up its message to customers this way—"You want your orders shipped without unnecessary delay, but we cannot ship . . . certainly not on time . . . if we do not have the proper packages. When you hold up drums (and barrels), you hold up the war effort, so please return empties promptly."

Other suppliers who are confronted with the same problem may obtain permission to copy part or all of National's effective approach to the problem, by addressing National Adhesives Divn., National Starch Products, Inc., 820 Greenwich St., New York 14, N. Y.

GENERAL ELECTRIC ANNOUNCES NEW DIVISION

A new division of the Appliance & Merchandise Department of General Electric Company to be known as the Resin and Insulation Materials Division, has been formed with E. L. Feininger as manager, it is announced by H. L. Andrews, vice president in charge of the A. & M. Department, Bridgeport, Conn. The new division will be responsible for the manufacture, engineering and sales of insulating varnish, glyptal, varnished cloth and mica products.

E. L. Feininger, manager of the new Resin and Insulation Materials Division, announces the appointment of C. K. Mead as sales manager, C. S. Ferguson as engineer, and H. K. Collins as superintendent. The division will be head-quartered in Schenectady, with the exception of Mr. Mead's sales operation which will remain temporarily in Bridgeport.

7 7 7 PUMP TEST CODE REVISED

Hydraulic Institute, the national trade association of pump manufacturers, announces complete revision of the Test Code Section of its Standards.

This Test Code Section, first published in 1936, contains specific recommendations for the testing of centrifugal and rotary pumps, both for acceptance tests in the field, and in the plant of the pump manufacturer.

The Code contains the limiting conditions for all methods of quantitative determination of capacity, head, and power input, whereby the accuracy for an acceptance test can be obtained.

Copies may be secured from Hydraulic Institute, 90 West Street, New York 6, New York, at 50¢ per copy, payable in advance.



Starrett Tools and the tools of war they're helping to make have many characteristics in common. Both are built for accurate, dependable performance under strenuous service conditions. Both are designed to supplement and sustain the skill and efficiency of their users—to help maintain the morale that hastens victory.

The makers and the distributors of Starrett Tools are acutely conscious of the importance of providing the tools essential for war production and the qualities in these tools that users rely upon to help them meet production schedules and precision standards.

You may continue to put your trust in Starrett Tools.



THE L. S. STARRETT CO * ATHOL * MASSACHUSETTS * U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS . DIAL INDICATORS . GROUND FLAT STOCK HACKSAWS . METAL CUTTING BANDSAWS . STEEL TAPES

Nov

Among the ASSOCIATIONS

NEW ASSOCIATION AT MEMPHIS

H. R. Graves Made President of Shelby County Purchasing Agents Club

The Shelby County Purchasing Agents Club was recently organized in Memphis, Tenn., at a meeting in the Hotel Chisca in that city, at which the following officers were elected:

President, H. R. Graves, Purchasing Agent for the National Fireworks, Inc., Cordova, Tenn.

Vice President, Edgar M. Almy, National Fireworks, Inc., Cordova.

Secretary, J. R. Whalen, Jr., Q. O. Chemical Co., Memphis.

Recording Secretary, Miss Tommie Fuller, Southern Cotton Oil Co. Refinery, ... Memphis.

The following committees were also appointed:

Arrangements: Chairman, B. E. Humphreys, McDonnell Aircraft Corp., Memphis; John E. McCall, Fisher Memphis Aircraft Division of General Motors; and Miss Mary Ann Bennett, Chicago & Southern Air Lines, Memphis.

Membership: Chairman, Miss Mary Speltz, Memphis Plywood Corp.; Russell Williams, 830th A.A.F. Specialized Depot; and, G. H. Pyle, McDonnell Aircraft Corp.

Welcoming: Chairman, J. R. Whalen, Jr.; Ensign A. L. McAra, Supply Corp., U. S. Navy Reserve, Millington, Tenn.; Jack Eavenson, Continental Piston Ring Co., Memphis; Birney L. Hand, Layne & Bowler, Inc., Memphis; George Chapman, Swift & Co. Oil Mill, Memphis; Robert Fedders, McCleary Bros., Memphis, and A. K. Cliff, Memphis Army Service Depot.

Monthly meetings of the club will be held the third Tuesday of each month at the Hotel Chisca. At the October 19 meeting, W. M. Kettrick, vice president, seventh district, National Association of Purchasing Agents, Mengel Co., Louisville, Ky., was guest speaker. He explained the functions and activities of the National Association.

PURCHASING IN THIS CHANGING WORLD—ST. LOUIS

1 1 1

Dr. William McClellan, Chairman of the Board of the Union Electric Co., St. Louis, Mo., made an interesting address on "Purchasing in this Changing World" at the October 21st meeting of the Purchasing Agents Association of St. Louis, at the Hotel Coronado. The second of a series of discussions on "Business Trends" a new type of presentation of information prepared by the Commodity Committee, and lead by Wm. C. Krueger, chairman was well received by the membership, many taking part therein.

Business Trend Forum

Commenting on the first installment of "Business Trends" by Chairman Krueger, the St. Louis Bulletin states: "He told us of a statement by a high O.P.A. official that aside from certain exceptions (where it is known that demand will continue high), price ceilings will be removed within 60 days after the cessation of

hostilities. And of another WPB order which relaxes copper somewhat - that material that we thought would always be short until the war is over. Does that mean that in the face of intense military activity in prospect we have succeeded in balancing supply and needs of this highly essential war material. And what of price? Twelve cents? The last war took it to thirty-two cents! And what of the men, labor and management alike who have learned to make aluminum and magnesium in vast quantities. Will they go after new markets? And will we potential users wait for our competitors to show us how to change our products to effect broader and more profitable markets?

"Of course we have but one objective in view at present and that is to win the war, but Bill told us that cotton consumption was off 9 per cent from a year ago and he also told us of price reductions on certain types of plastics. What does this all mean? Is it possible that we may be approaching a stage, even with the end of the war some time off, where shortages are not always the rule and where government-fixed price ceilings do not always represent the true market level?"

7 7 7 RENARD ADDRESSES MEETING AT NEW ORLEANS

George A. Renard, Executive Secretary-Treasurer of the National Association of Purchasing Agents, was the chief speaker at the October 11 meeting of the Purchasing Agents Association of New Orleans at the St. Charles Hotel. The meeting was dedicated to "Executives (Continued on page 168)

SHELBY COUNTY PURCHASING AGENTS CLUB, MEMPHIS, TENN.



Front Row: Birney L. Hand, Jack Eavenson, Ensign A. L. McAra, President H. R. Graves, Mrs. Sue Rauch, Secretary J. R. Whalen, Jr., Vice President E. M. Almy, and Miss Mary Speltz. Back Row: G. H. Pyle, Jane Inez Gordon, B. E. Humphreys, Russell Williams, A. K. Cliff, Recording Secretary Miss Tommie Fuller, George Chapman, Miss Mary Ann Bennett. John E. McCall and Bob Fedders.



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(Continued from page 166)

Night", and was featured by an unusually large attendance of Purchasing Agents and other executive officers of their respective companies.

MIDWEST ASSOCIATIONS HEAR TALK ON CONTRACT TERMINATIONS

Editor Stuart F. Heinritz of PURCHASING Magazine discussed the subject of "Contract Terminations" at the October 19 meeting of the Purchasing Agents of Central Michigan, held in the Hotel Porter, Lansing, Mich., the October 21 meeting of the Purchasing Agents Association of Toledo, in the Commodore

Perry Hotel, Toledo, O.; and the October 22nd meeting of the Purchasing Agents Association of Columbus, Ohio.

JOINT MEETING WITH COST ACCOUNTANTS AT PITTSBURGH

The Purchasing Agent Association of Pittsburgh devoted its October 20th meeting, which was held in the Fort Pitt Hotel, to a joint meeting with the Pittsburgh Chapter of the National Association of Cost Accountants, at which Willard G. Haight of the General Motors Corporation presented "Controlled Materials Plan—a Case Study." Mr. Haight is Supervisor, Material Analysis, General

Motors Corp., and his case study gave a birds-eye view of how General Motors is set up for applying and interpreting CMP. He is chairman of the General Motors Committee on Uniform Material Analysis and Procurement Procedures as related to PRP and CMP. Charles E. Fay, Westinghouse Electric & Mfg. Co., was chairman of the meeting.

PRESIDENT BECOMES FIRST VICE PRESIDENT

Because of poor health, B. W. Johnson, president of the Purchasing Agents Association of Detroit, found it necessary to resign. Under the by-laws of the association the board of directors is authorized to fill a vacancy, and at a recent meeting



E. M. Helwig, President, Detroit Assn.

the board elected E. M. Helwig, Purchasing Agent, Burroughs Adding Machine Co., and first vice president of the association, as president. In turn, Mr. Johnson was elected to fill the vacancy in the office of first vice president.

9 9 9 GOOD START FOR ELMIRA ASSOCIATION

The Elmira Association of Purchasing Agents started its 1943-44 season in good style the evening of September 28 at the Mark Twain Hotel, Elmira, N. Y., the meeting being marked by the visit of President Ben Newberry of the N. A. P. A., accompanied by 8th District Vice President George McCaffrey.

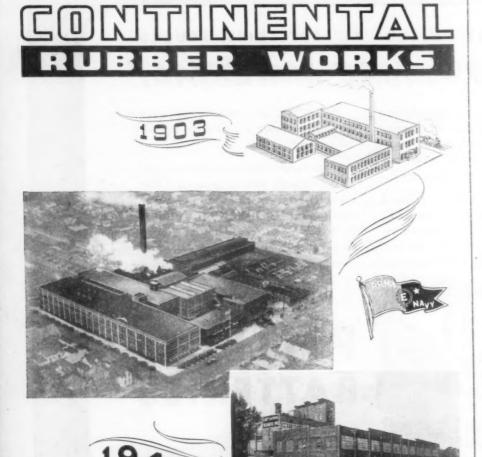
John S. Netth, president, presided over the meeting which was attended by 29 members in addition to eighteen guests executives of local firms. Reporting on the meeting, S. W. Jones, Chairman of the association's Publication and Publicity

Committee, stated:

"Rap Baker, Treasurer, gave his brief but wealthy report, and satisfaction at our bank balance was evident. George Mc-Caffrey led off with a fine 20 minute dissertation on the make-up of the N. A. P. A., explaining for the benefit of newer members how our National is made and operated from the bottom up. George is to be congratulated upon his lucid description of this phase of our organization.

"President John Netth next introduced President Ben Newberry of the National Association and for forty minutes we listened to Ben's comforting Texas voice as he analyed the "Purchasing Agents and the War". This reporter was richly

(Continued on page 170)



Organized in 1903—operating under the same management in 1943. Pioneers in rubber for motor cars—and aircraft. Originators of vital molded and extruded industrial rubber products. Pre-war users of synthetics. Suppliers of essential equipment for Army, Navy and Airforce. Geared to produce new

40 Years of constant progress

types of mechanical rubber for post-war business.

CONTINENTAL RUBBER WORKS, ERIE, PENNSYLVANIA, U.S.A.

MAKERS OF THE WITALIG LINE FOR 40 YEARS



EASTERN MACHINE SCREW



CORPORATION

MANUFACTURERS O



SELF OPENING DIE HEADS
THREADING MACHINES

FEED FINGERS

New Haven, Conn.



The Sign of Precision Threading Tools

..and the sign for better shipping

For self opening Die Heads Threading Machines and other Masonry products, the H & G trade mark has an enviable reputation. They, like hundreds of other small parts manufacturers, use the one, quick, convenient and safe method of parts mailing. It is the Mason MailMaster, a precision made mailing container, which because of its many sizes, convenient labelling, and convenient closure is the answer to the man-power shortage in the shipping department. For better shipping—safer shipping—use Mason MailMaster.

THE MASON BOX CO.
ATTLEBORO FALLS, MASS.

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No

War Winners at Work



Purchasing Agents

AJAX is a wedge-shaped cup without side seams or folds. It fits into the hand open and ready for use. Dispenser holds 250 cups nested.

AERO is a round paper cup, with rolled edge and inset bottom. Dispenser holds 100 cups nested.

Columbian and PEERLESS are strong flat cups, packed 250 in dispensing cartons.

All cups are withdrawn from dispenser without touching drinking edge.



AJAX AND AERO

Sanitary Paper Drinking Cups

LOGAN DRINKING CUP CO. 68 Prescott Street, Worcester, Mass. PACIFIC COAST ENVELOPE CO. 416 Second Street, San Francisco







PRESIDENT NEWBERRY AND ROCHESTER BOARD

TOP ROW: John T. Harbison, secretary-treasurer, Eastman Kodak Co., Hawk-Eye Works: H. B. Collins (past president), Eastman Kodak Co., Camera Works; Warren W. Irwin (past president), University of Rochester and Strong Memorial Hospital; David C. Borlen, third vice president, Yawman & Erbe Mig. Co.; J. A. Cooney (past president), International Salt Co., Inc., Retsof, N. Y.; Wilson P. Wight, second vice president, Bausch & Lomb Optical Co.

BOTTOM ROW: Paul L. Burroughs, first vice president and national director, Rochester General Hospital; George L. McCaffrey, eighth district vice president. Auto-Lite Battery Corp., Ben R. Newberry, president. National Association of Purchasing Agents, Lone Star Gas Co., Dallas. Tex.: W. A. Charity, president, Genesee Brewing Company.

(Continued from page 168)

impressed with Ben's grasp and understanding of the events before, during and after this global upheaval. Ben is an honest, sincere, American citizen. members enjoyed his presence and his informal manner. He is a calming influence in these hectic days. His bedrock belief in sound fundamentals, faith in God and in America, is refreshing. local directors' meeting was held by the new officers and directors for an hour before our regular meeting".

1 1 1 NEWBERRY CHIEF SPEAKER AT CHICAGO MEETING

President Ben Newberry of the National Association of Purchasing Agents, Director of Purchases and Material for the Lone Star Gas Company and Lone Star Producing Co., Dallas, Tex., was the chief speaker at the October 19 meeting of the Purchasing Agents Association of Chicago, at the Hotel Sherman. Mr. Newberry was introduced by National Association Vice President Emil H. Jones, Dist., No. 3, of the E. R. Wagner Manufacturing Co., Milwaukee.

By courtesy of the General Motors film library, two interesting sound motion picture films were shown. The first was "King Cotton", demonstrating modern farming, science and industry promoting the use of cotton in fabrics, coating materials, plastics and modern highways. The second picture was "Frontiers of the Future" with Lowell Thomas as elucidator, explaining some of the miracles of modern science and industry such as the making of "wool" from cheese, plas-

tics developments, the far end by products of coal, oil and sea water, etc. Both pictures proved of unusual educational

The Chicago association has added fourteen new members to its roster since the first of September.

NATIONAL OFFICERS SPEAK AT ROCHESTER

President Ben. R. Newberry of the Association of Purchasing National Agents, and Eighth District Vice President George McCaffrey, were guests of honor at the September meeting of the Purchasing Agents Association of Rochester, New York. On the occasion of their visit, a very interesting "plant visitation" had been arranged for, through the Odenbach Ship Yards. In addition, a small reception was held at the Sagamore Hotel to give the board members an opportunity to meet their distinguished guests prior to the scheduled meeting at the Richester Club. At the meeting in the evening Mr. McCaffrey gave an interesting talk on the National Association and the job of the National Director. President Newberry made an extremely enightening talk on the value of the purchasing agent, past and present, to the war effort.

CANTON AND AKRON HOLD JOINT MEETING

1 1 1

The Canton and Eastern Ohio Association of Purchasing Agents and the Purchasing Agents Association of Akron

(Continued on page 172)

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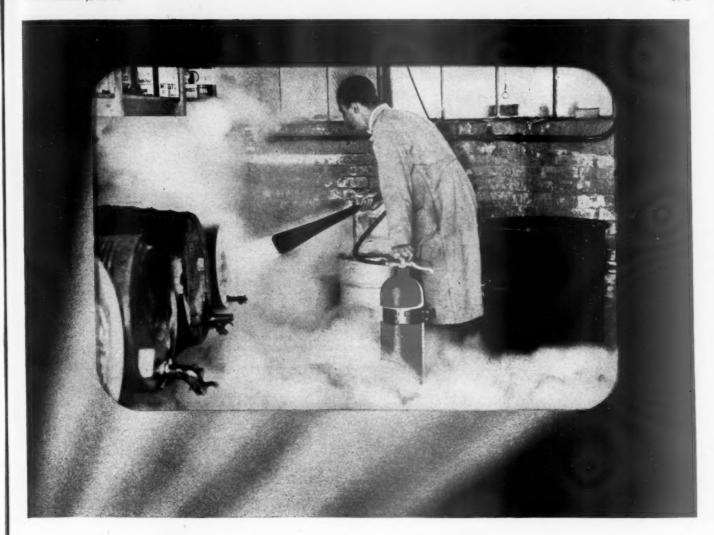
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The villain of this film threatens your plant, too!

FIRE, the saboteur, can destroy your plant—even though you've installed the most modern fire-fighting equipment! If your men don't know how to operate it, or if they use the "right" equipment against the wrong fire, disaster can easily result.

Believing that visual instruction is easiest understood, longest remembered, Walter Kidde & Company have produced a color film with sound. It shows exactly what to do when fire strikes. It pictures the different classes of fire, shows how to fight each of them. It's fast-moving, grips the attention of its audience during the twenty minutes of its run.

We'd be glad to show this film to key men at your organization. There is no obligation whatever for this service. Just drop a line today to the address below and we'll arrange a showing at your convenience.



WALTER KIDDE & COMPANY, INC., 1146 MAIN STREET, BELLEVILLE, N. J.

ONE SURE WAY

INSIST ON GRIFFIN

In today's metal cutting, the one sure way for satisfaction is to insist on GRIFFIN BLADES.

There is the Molybdenum High Speed Steel Blades, the most economical cut-off tool on the market today; also High Speed Steel, Soft Center and Soft Back types. The line is complete with the right blade for every job.

Try Griffin. If your distributor cannot furnish, write us.

JOHN H. GRAHAM & CO. INC.

General Sales Agent

105 Duane Street New York City

Made by G. W. GRIFFIN CO., Franklin, N. H.



TAPS FOR SHIPMENT FROM STOCK

Subject to prior sale



"MY-PRO means High Production"

3	ZE	FG 01	P6 1	PG 2	Com! Grnd	Cut	SIZE	PG 01	PG I	P6 2	Cmm1 Grnd	Cut
/4-20	2 flute 3 flute	X	x	X			9/16-12 4 flute 9/16-16 4 flute	X	(x)	(x)	(x)	
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HY-PRO TOOL CO.

1/2-13 3 flute

(x) (x)

New Bedford, Mass., U.S.A.
BUY MORE BONDS-GET IN THE SCRAP

(Continued from page 170)

(Ohio), held a joint meeting at the Elks Club, Canton, October 20. The speaker for the evening was B. T. Bonnot of The Bonnot Company of Canton, the subject of his talk being "Keeping America on the Beam".

1 1 1 FIVE-STAR PROGRAM AT SEATTLE

A five-star program held the undivided attention of the members of the Purchasing Agents Association of Washington, at the Washington Athletic Club, Seattle, Thursday, October 14. Charles V. Tinker, president, presided over the meeting which had been arranged by Vice President D. P. Brewer.

Featured on the program were the following: (1) Robert A. Crawford, Engineering Service Manager, Boeing Aircraft Co., spoke on "A Service Engineer's View of Boeing Flying Fortress in Action". (2) J. C. Clendenen, Standard Oil Co. of California, presented sound movie entitled "Defense of Stalingrad". (3) C. C. Holloway, Purchasing Agent, Isaacson Iron Works, and William Angus, Pacific Marine Supply Co., made an analysis of O. D. T. Order 17, Amendment 3 B, on Limiting Wholesale and Retail Deliveries. (4) Beall McCulloch of the Seattle Advertising & Sales Club spoke on "Post War Products Survey for Washington Manufacturers". (5) National Director M. F. McClane, Purchasing Agent, Washington Cooperative Egg & Poultry Assn., reviewed the late N.A.P.A. Releases. And, as an appetizer preceding the regular meeting, at 4:30 P. M. there was a session on "Priorities up to Date" led by John S. Robinson, P. A., Todd Seattle Dry Docks as Chairman, and Carl C. Nissler, local W. P. B. analyst as counselor.

PRESIDENT NEWBERRY OF NATIONAL AT MILWAUKEE

"The Purchasing Agent and the War" was the topic of talk by President Ben R. Newberry of the National Association of Purchasing Agents at the October 15 dinner meeting of the Milwaukee Association of Purchasing Agents, at the Milwaukee Elks' Club. An added feature of the meeting was the presentation of a sound film "The Metal Without An Equal", released by the Ampco Metal Co., with commentary on the film by W. W. Edens.

The November meeting of the association will be "Hunters' Night".

PRESENT AND FUTURE ECONOMICS AT INDIANAPOLIS

Dr. M. O. Ross, president of Butler University, at a meeting of the Purchasing Agents Association of Indianapolis held in Columbia Club, Indianapolis, warned in an address on "Present-Day and Future Economics" that unless there is a correlation between the developing

(Continued on page 176)

FIRTHITE SINTERED CARBIDES FOR UNIFORM PRECISION WAR'S "appetite" for interchangeable parts knows no bounds. Since interchangeability depends upon uniform precision, tools must stay sharp on long runs or long cuts.-That's where FIRTHITE Sintered-Carbide Cutting Tools excel. Their neardiamond hardness maintains uniform precision in mass production and on hard materials. STUDIES GOVERNA Offices: McKEESPORT, PA. NEW YORK - HARTFORD - PHILADELPHIA CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES

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Standardize Now on for Easier Postwar Retooling

"We have been using Black & Decker Tools for five years .: .: STANDARDIZED ON THEM . . . making possible quick replacements and better repair parts service . . . "

THE manager of an eastern shipyard refers to the Black & Decker Portable Electric Drills, Nut Runners, Screw Drivers, Saws, Sanders and Lectro-Shears now helping to speed production, save time, raise worker craftsmanship on a huge boat building program.

Other war producers think likewise: "You can't have too many such all-around tools," says one. "Repeat purchases of B & D Tools for over 14 years indicates what we think of them," says another. "With minimum care, they give excellent service—always dependable," from another. The pictures here show why today's war producers—relying heavily on America's favorite electric tools—are planning to standardize on them for their postwar retooling programs. They

show, too, typical examples of American "free enterprise" at work . . . of close cooperation between manufacturer and tool supplier . . . of men pooling their experience and ingenuity to turn out "what it takes to win" faster and better.

Smart production men know the complete Black & Decker line offers the right tools for every job . . . that standardizing on Black & Decker Electric Tools means convenient interchangeability of parts . . . that 26 Factory Branches offer quick replacement parts and repairs . . . that close-at-hand Distributors offer expert help on retooling problems. It will pay you, now, to keep posted on B & D Electric Tools as part of your postwar planning. The Black & Decker Mfg. Co., Dept. 764, Towson 4, Maryland.





DRIVING screws into framing of motor patrol boats with Black & Decker Scrugun goes 10 times faster than by hand. Scruguns are used to drive a wide variety of wood and self-tapping screws, machine screws and nuts on high speed production schedules.



CUTTING galvanized iron sheets for coal bin linings with Black & Decker Lectro-Shears. These Shears follow straight, curved or irregular lines easily and accurately because the cutting operation is always fully visible to the Lectro-Shears operator.

Black & Decker Tools



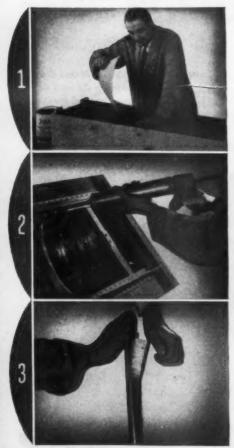
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· Adhering Materials



- 1 EXPORT PACKAGING-3-M Adhesives are used for sealing export packages, meeting all requirements for an airtight waterproof package.
- 2 TANK SEALING-3-M Sealers-seal joints of tanks and containers to prevent leakage caused by pressure and leaks caused by action of various solvents and
- 3 ADHERING MATERIALS-A wide variety of 3-M Adhesives for adhering materials-wherever like or unlike materials are to be joined.

There are over 100 types of 3-M Adhesives in industrial use today. Our 3-M Adhesive Engineers have wide experience with adhesive problems and will be glad to aid you with any applications you would like to make. A request for this service will not obligate you.

MINNESOTA MINING &	A
MANUFACTURING CO.	3.
ST. PAUL 6, MINNESOTA	1 ADW
Adhesive Division-Detroit 2, Michigan	A SE
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	P1143	3
Gentlemen:		
Kindly have a	one of your 3-M Adhes	ive Engi
Name		
Name		************

MEMPHIS WOMEN BUYERS FORM CLUB

The women in purchasing departments of various industrial plants in Memphis, Tenn., have banded together and formed a dinner club to meet monthly at the Hotel Peabody in that city. Mrs. Sue Rauch, owner of the Phoenix Rubber Co., Memphis, is the originator of the plan. There are a number of women purchasing agents and assistants in Memphis-a few veterans in the field and many who have replaced men gone to war, and it is her belief that the club will be of mutual enefit to its members and their respective

companies. The next meeting of the club will be held November 29th.

Those in attendance at the first meeting included Miss Tommie Fuller, Southern Cotton Oil Co. Refinery; Misses Mary Ann Bennett and Marie Bosler, Chicago & Southern Airlines; Miss Mary Speltz, Memphis Plywood Corp.; Mrs. Juanita Williams, U. S. Engineers; Mrs. James Harwood, N. O. Nelson Mfg. Co.; Miss Jane Inez Gordon, Woodson-Tenent Lab-oratories; and Mrs. Edwina Tapp, Phoenix Rubber Company.



First meeting of Purchasing Women of Memphis. Left to right: Miss Mary Speltz, Memphis Plywood Corp.: Jane Inez Gordon, Woodson-Tenent Laboratories: Mrs. Edwina Tapp, Phoenix Rubber Co.: Miss Tommie Fuller, Southern Cotton Oil Co. Refinery: Mrs. James Harwood, N. O. Nelson Mig. Co.: Miss Marie Bosler, Chicago & Southern Air Lines: Mrs. Tom Spalding; (a guest); and Miss Mary Ann Bennett, Chicago & Southern Air Lines.

(Continued from page 172)

economic unity of the world and the divided political organization, the continuation of modern wars will be inevitable. He declared that the miracles of modern industry, technology and science have bound the world together in a small economic and business unit.

1 1 1 "CANCELLED WAR CONTRACTS" THEME LEHIGH VALLEY ASSOCIATION

Col. Joseph A. Whelan, chief of the legal department of the Philadelphia Ordnance District, addressed the September meeting of the Purchasing Agents Association of the Lehigh Valley on "Cancelled Contracts", at the association's meeting in the Country Club of Northampton County.

Col. Whelan, who was introduced by Capt. A. B. Allison of the Bethlehem, Pa. Ordnance District, stated that some 5000 contracts have been cancelled incident to changing types of warfare which have made various ordnance units obsolete. He explained the manner in which the Army adjusts cancelled or cut-back contracts, stating that this is done immediately with complete fairness to the company concerned.

At the conclusion of his address, the Bethlehem Steel Company picture "Steel in the Making" was shown. C. O. Richards of Easton was chairman of the meet-R. T. McClarin, Bethlehem, Pa., president of the association, presided at the business session following the dinner.

The following new members were elected to membership: T. J. McDermott, Jr., McDermott Bros. Co., Allentown; L. W. Wieder, Allentown-Bethlehem Gas Co., Allentown; R. J. Hummell, Allentown Call-Chronicle; and E. C. DeLong, Office Utilities Agency, Allentown.

Members and guests golfed in the afternoon, a kickers handicap being held, and the following were prize winners: H. E. Kleckner, Phillipsburg, N. J.; J. A. Krugler, A. C. Jackson, Philip Miller, Easton, and L R. Albright, Jr., Allentown. The tournament was in charge of W. T. Dougherty.

The Association sponsored the preliminary meeting of a priorities association for the Lehigh Valley which was held in the Bethlehem Elks Club, October 4 at 8:00 P.M. These meetings are open to all persons in the Lehigh Valley concerned with priorities.

NEWBERRY AND McCAFFREY SPEAK AT ALBANY

New industries created incident to the war effort will play a tremendous role in supplying the United States and the rest of the world with finished products. This was the highlight of a talk made before the September 29 meeting of the Purchasing Agents Association of Eastern New York held in the DeWitt Clinton Hotel, Albany, N. Y. by Ben. R. Newberry, president of the National Asso-

(Continued on page 178)



War has exploded the German

chemical myth

This is the Chemical Age and many people believe that Germany is the chemical nation. Yet history shows that the synthetic organic chemical industry really started in England, got much of its early impetus in France and has reached its greatest development right here and now in America. Germany undoubtedly contributed vast research... and vast propaganda... but she made the mistake of trying to make it a German monopoly, through Government subsidies and control.

The American chemical industry, operating on private capital, has pulled out of the test tube miraculous new medicines to save life, super-powerful explosives to overthrow dictators, marvelous new materials

that Nature never dreamed of. Koppers is one of the great raw materials sources for the chemical industry. Coal tar chemicals go into the new explosives, into the new wonder-working medicines, into the new plastics, into more productive agriculture. Koppers coke ovens are recovering vast quantities of chemical raw materials, and Koppers mines are producing millions of tons of coal.—Koppers Company and Affiliates, Pittsburgh (19), Pa.

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(Continued from page 176) ciation of Purchasing Agents. He said that the new industries would be needed to help supply the greater demand of the post-war era, and that there would be more selling to other nations, and more buying than ever before. Vice President George L. McCaffrey, Syracuse, N. Y., also spoke.

LOUISVILLE'S PAST PRESIDENTS MEETING

Nine past presidents of the Purchasing Agents Association of Louisville (Ky.), were honored at the regular monthly dinner meeting of the association held in the Kentucky Hotel, Louisville, September 21st. A framed certificate of appreciation was presented to E. E. McCulley, the retiring president, by W. M. Kerrick, Seventh District vice president of the N. A. P. A., and first vice president of the Louisville association. The other past presidents in attendance were: R. L. Schmitt (1928), C. Claude Watkins (1931), T. A. Corcoran (1934), Louis M. Hartman (1937), G. W. Leep (1939), Lloyd Greenebaum (1940), Malcolm Mason (1941); and, letters of goodwill were read from L. A. Anderson of Akron, O., president in 1938, and from S. T. Hull of Los Angeles, president in 1936.

Professor Charles W. Williams of the University of Louisville spoke on "Has Inflation Been Stopped". He expressed the opinion that it had not, and that it was on a temporary plateau from which

it would start rising again. C. Claude Watkins, Priorities Specialist for the General Box Company had for his subject "Priorities Up-To-Date". He explained in detail the organization of governmental agencies affecting business, the route of travel for various applications, and made several suggestions as to the best methods of obtaining prompt action. He discussed briefly a new system of allocations known as C. A. P., which is reported to be in the course of develop-

The association passed a resolution to provide the funds for a one night sponsorship of each of the four local U.S.O.

Agencies, at which the members and their wives will serve as hosts and hostesses.

Malcolm Mason, the Official Introducer of the association, presented two new members, namely, M. S. Weber of the B. F. Goodrich Co., and J. Hubbard Tooms of the Rowland Paper Co. The following were elected to honorary memberships for the coming year: Professor Charles W. Williams, S. T. Hull, E. F. Stager, L. A. Anderson, C. C. Watkins, and W. M. Embry.

SPRINGFIELD ASSOCIATION HAS BUSY MONTH

October was a busy month for members of the Purchasing Agents Association of Springfield, Ohio. The regular monthly meeting was held at the Shawnee Hotel October 13. This was followed by the Sixth District Council Meeting held in Columbus October 22-23. Of especial interest was a meeting with the Engineers Club to hear a presentation on electronics by representatives of the Westinghouse Electric & Mfg. Co., who showed a film explaining various applications. Another meeting was a plant visitation with the W. A. Hammond Drierite Co., Xenia, Ohio. November 10 is scheduled as Executive Night meeting, the guest speakers being Gordon Yost, Sixth District vice president, and President Ben R. Newbery of the National Association.

TULSA OPENS SEASON WITH PRIORITIES REVIEW

The Fall and Winter schedule of the Purchasing Agents Association of Tulsa, Okla., commenced with a "Priorities Review", September 28. The speakers were Chairman W. H. Barclay of the Priorities Committee, Darby Petroleum Corporation; F. P. Nopper, Gulf Oil Corp.; Paul Hedrick, oil editor of the Tulsa World; J. S. Hawley, Stanolind Oil & Gas Co., and A. A Hardy, district priorities officer, WPB.

At the association's October 13 meeting, the principal speaker was Lieut. Col. C. (Continued on page 180)

PLASTICS DISCUSSED AT WASHINGTON, D. C. Association Holds First Anniversary Meeting

James R. Turnbull, Director of Product Research, Plastic Division, and also Manager of Plastic Product Development of the Monsanto Chemical Company, was the guest speaker at the first anniversary meeting of the Purchasing Agents Association of Washington, D. C., at the Mayflower Hotel on the evening of October 12, 1943, his subject being "Plastics-at the Fighting Front-and in the Future."

Mr. Turnbull stated that Germany's lead in the field of synthetic chemistrydeveloped under forced draft during the ten war-preparation years-has been forever broken. He declared that although German synthetics manufacture "ahead of the United States in 1941, we have, in two short years, developed technical advances superior to anything else on earth." He said that the entire American war machine was heavily dependent upon the basis chemical industry, and that plastics represented the finished product of many of those chemicals at the battle

Using the individual soldiers as an example, Mr. Turnbull said, "The most impressive comparison of the role which plastics play in this war can be seen in the individual soldier of today and of World War I."

Whereas the 1917 soldier used virtually no plastics, "the American trooper returning from this war will be familiar with the

(Continued on page 268)



It's a simple matter for STAR to fit mechanical "tight spots". STAR does it every day with its unique welded construction that eliminates special patterns and castings completely. And it's the same with the other "tight spots," too—the unusual problems that puzzle manufacturers daily. In the CHICAGO PUMP CO.'s Comminutors for Sewage Plants, for example, STAR engineering provides exposed motors and reducers that withstand the extremes

of arctic ice or desert sand—and do it without special or costly construction.

Besides its complete line of standard motors, STAR provides tailored motors which combine the flexibility of specialized application and engineering with the obvious advantage of standardized design. Sizes $-\frac{1}{2}$ to 200 h.p. Write us about your requirements.

STAR ELECTRIC MOTOR CO., BLOOMFIELD, N. J.

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On hand or power jobs, Red End Blades give top production, smoothest cutting, longest life. Your new workers will find them easier and far less tiring to use on hand jobs. For every blade is Simonds-controlled from test tubes to package... made to Simonds' own standards in the world's most self-contained plant... where high-speed production keeps deliveries in step with rated orders. So send yours now to the nearest Simonds office.

SIMONDS SAW AND STEEL CO.

BOSTON: 1350 Columbia Rd.
NEW YORK: 11 Park Place
SAN FRANCISCO: 228 First St.
PORTLAND, ORE.: 311 S.W. First Ave.



* Bought Your Bonds this Week? *

(Continued from page 178)

A. Miller of the Oklahoma Ordnance Works, Pryor, Okla., who discussed the immediate relations of ordnance in war and the post-war possibilities of the Oklahoma Ordnance Works.

October 16, purchasing agents and salesmen enjoyed a day's golfing at the Indian Hills Country Club.

1 1 1

CONTRACT TERMINATION AT N. W. PA. MEETINGS

Lee Forker of the Quaker State Refining Co. spoke on the "Cancellation of Contracts" at the October meeting of the Purchasing Agents Association of Northwestern Pennsylvania, at Oil City, Pa. Speakers in a general commodity discussion were Chester Mochel, Oil Well Supply Co., Oil City, who reported on the steel situation; P. L. Gedeon, Universalist-Cyclops Steel Corp., Titusville, president of the association, spoke on the coal situation; and A. L. Clinger, Pennzoil Co., Oil City, talked on oil. H. L. Kaness of the Knox-Glass, Oil City, spoke on the urgency of the waste paper situation.

At the November 4 meeting of the association, Dundas Peacock, Controller, the Elliott Co., Jeanette, Pa., will speak on "Contract Terminations and Cancellations." This meeting is scheduled to be held in the Carver House, Warren, and representatives of all industries in the surrounding industrial area are invited to attend both the dinner and the meeting.

1 1 1

EASTERN N. Y. ASSN. NAMES TAILBY HONORARY PRESIDENT

Because President Joseph L. Tailby, Purchasing Agent A. P. W. Paper Co., Albany, N. Y., is now a member of Uncle Sam's armed forces, the members of the Purchasing Agents Association of Eastern New York named him Honorary President at a recent meeting, and elected the following slate of officers:

the following slate of officers:

President, W. Duncan Macfarlane,
Woodward Company;

Vice President, C. R. Friesner, Albany Corrugated Container Corporation, Co-

Treasurer, S. C. Main, National Commercial Bank & Trust Company.

Secretary, G. B. Tod, Schenectady Varnish Company;

National Director, H. L. Erlicher, General Electric Co., Schenectady, N. Y.

Executive Committee Members: L. H. DeLong, Clark Whitbeck Co., Schenectady; F. M. Roos, Consolidated Car Heating Co., Albany; and Fred P. Jannott of the Simmons Machine Tool Corporation, Albany.

1 1 1

SIX NEW MEMBERS ADDED TO RHODE ISLAND ROSTER

The fuel oil situation was the subject of an illuminating address by Dr. Robert E. Wilson, president of the Pan American Petroleum & Transport Co., The Amer-

(Continued on page 182)



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ican Oil Co., Mexican Petroleum Corp., and other subsidiaries, at the September 27th meeting of the Rhode Island Purchasing Agents Association, held in the Narragansett Hotel, Providence. Frank Adams, chairman of the association's Membership Committee reported the approval of six applications for membership by the Board of Directors.

LOS ANGELES ASSN. VISITS KAISER PLANT

1 1 1

Members of the Purchasing Agents Association of Los Angeles, had the privilege of visiting the Kaiser Company steel plant at Fontana, Calif., October 20,

which is acclaimed as one of the most modern steel mills in operation. In addition to seeing steel in production, the visitors also witnessed the making of various by-products such as creosote oil, ammonium sulphate, benzol, toluol phenol, etc.

COMPANY EXECUTIVES HEAR RENARD AT HOUSTON

George Renard, Executive Secretary-Treasurer of the National Association of Purchasing Agents was guest speaker at a meeting of the Purchasing Agents Association of Houston, October 12, to which executives of the concerns represented by the members had been invited. The total number present was 103—an excellent

tribute to the speaker and his reputation for making forceful, worthwhile talks. Mr. Renard was introduced by O. E. McClatchey, Tulsa, Okla, vice president of District No. 2 who had previously been introduced by President D. M. Layer of the Houston association. He made an enlightening, optimistic talk on material developments, how they were affecting the war and how they would probably affect international trade after the war.

"VICTORY RIDES THE RAILS" AT BALTIMORE

C. Vernon Thomas, special representative of the B. & O. Railroad spoke on "Victory Rides the Rails" at the October 20 meeting of the Purchasing Agents Association of Baltimore, in the Lord Baltimore Hotel. A. R. De Ford of the War Price and Rationing Board presented a motion picture on rationing—"Holding the Home Front Line".

1 1 1 DISCUSS PRIORITIES AT READING MEETING

L. L. Harrison, Philadelphia regional priorities manager for the WPB, and R. S. Smyth, production and inventory analyst of the Allentown-Reading WPB district, lead a discussion of priorities at the October 11 meeting of the Purchasing Agents Association of Reading, Pa., held in the Iris Club of Wyomissing.

TALK ON PLASTICS AT DAYTON MEETING

Dr. Reid G. Fordyce spoke on "Plastics in This Modern World" at the October 15 meeting of the Purchasing Agents Association of Dayton, Ohio, at the Engineers Club. Dr. Reid is research chemist of the central research division, Monsanto Chemical Company.

GEORGE RENARD SPEAKS AT FORT WORTH

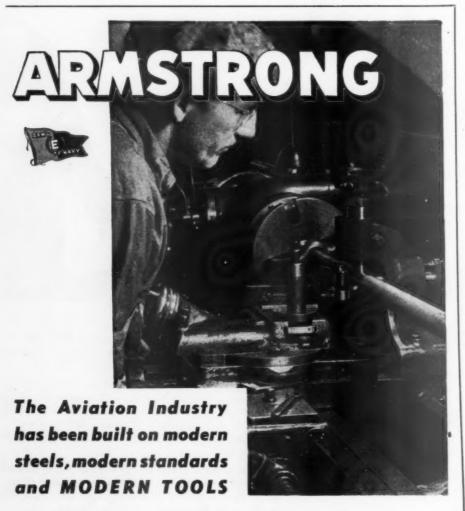
National Secretary George Renard was guest speaker at a meeting of the Fort Worth (Tex.) Purchasing Agents Assn. October 13th at the Worth Hotel.

Major General Frederick Gilbreath, Commanding General of the San Francisco Port of Embarkation addressed the September monthly dinner meeting of the Purchasing Agents Association of Northern California on "The San Francisco Port of Embarkation", at the St. Francis Hotel, San Francisco. Major Gilbreath reviewed the growth of the port in the nast 50 years.

1 1 1 PLANNING FOR THE POST-WAR PERIOD—PITTSBURGH

Russell Weismann, associate editor. Cleveland Plain Dealer, Cleveland, O., was the principal speaker at the opening fall meeting of the Purchasing Agents Association of Pittsburgh, which was held

(Continued on page 184)



A creation of modern times and forward-looking men, the Aviation Industry has probably the finest equipped shops and tool rooms in the world. It is significant that throughout "Aviation", ARMSTRONG TOOL HOLDERS are standard equipment. In the Armstrong System Aviation has found dependable, efficient tools for every operation on lathes, planers, slotters and shapers—modern ARMSTRONG TOOL HOLDERS that "Save: All Forging 70% Grinding and 90% High Speed Steel"; that easily handle modern tough alloy steels at modern cutting speeds; that are always ready for work without expensive delays for tooling up.

With today's tremendous demands, close scheduling, where even minutes are expensive, requires dependable tools of absolutely certain performances — and Aviation has found the answer in ARMSTRONG TOOL HOLDERS.

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JOEY ON-THE-JOB SAYS...

"I give 'em a beating
and then wash
'em up and they're
ready for MORE!"

JOMAC

REGULAR INDUSTRIAL GLOVES

They wear longer—taking the roughest handling and giving as much as 7 times the service of ordinary work-gloves. A special knit in the Jomac Fabric makes this extraordinary wear possible. This hidden lock-stitch keeps the thick pile in place . . . and gives thousands of sturdy "cushions" which provide a semi-heat-resisting glove that protects the hands . . . allows a breathing-space to make possible the handling of reasonably hot metals. Endorsed by leading American shops and foundries.

And Jomac Gloves can be laundered, too. They are easy to wash, easy to keep clean . . . a safeguard against the dangers of dermatitis and other skin infections.

(Jomac also makes the famous Heat-Resisting Gloves.)

TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs.
Test them for wear, for washability, for economy, for increased production. Write for full details.

JOMAC INDUSTRIAL GLOVES

C. WALKER JONES CO.

6135 N. Lambert Street, East Germantown, Philadelphia 38, Penna. (Continued from page 182)

in the Hotel William Penn, September 21st. His subject was "How and What Can We Plan for the Post War Period". J. H. Phillips is chairman of the association's Program Committee.

The Pittsburgh Association regretfully reports the recent sudden death of H. V. Natcher, Purchasing Agent of the M. B. Suydam Co., who has been a member of the association since June 1942.

NEWBERRY OPENS NEW SEASON AT SYRACUSE

Ben. R. Newberry, president of the National Association was the principal speaker at the opening meeting for the fall and winter season schedule of the Purchasing Agents Association of Syracuse, at the Onandaga Hotel, Syracuse, September 22nd. George L. McCaffrey of the Owen-Dyneto plant of the USL Battery Corp., Syracuse, N. Y. vice president, District No. 8 of the National, also addressed the meeting.

BIRMINGHAM ASSOCIATION MAKES INDUSTRIAL SURVEY

The Purchasing Agents Association of Birmingham, Ala., is making a statewide industrial survey, with a view to developing practical information that will be of value in bringing about quick, efficient turnover in Alabama industries from war to peace production. The findings of the Survey Committee appointed by President Clyde H. Porter will be placed at the service of the Alabama Committee for Economic Development to aid in its plan of maintaining high employment levels in the postwar period.

NEW YORK ASSOCIATION RECORDS MEMBERSHIP OF 499

With the addition of 23 new members reported at the October 20 meeting of the Purchasing Agents Association of New York, the membership total was brought to 499. Seven new applications are now before the membership committee. The outstanding-feature of the meeting was the unveiling of a Service Flag bearing 27 stars, each representing a member of the association now in the armed forces of Uncle Sam.

National Director Walter E. Cummin, reported on the recent 8th District Council meeting. He said that President Ben R. Newberry of the National Association would be guest speaker at the January 18 meeting of the association. He also stated that the 1944 annual convention of the National Association was scheduled to be held in the Waldorf Astoria Hotel, New York, the last week in May. The National Association now has a membership of 7464, 1538 of whom are in the 8th district.

The fuel situation was discussed at the Forum meeting preceding dinner, and the substance of the discussion was that both the coal and the fuel oil situations were not as bad as they were or might be.

(Continued on page 186)



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"AT THE end of 5000 cycles of rubs—felt against felt and 2 rubs per cycle—the eighteen Booth felt specimens were measured for wear. Only 4 specimens showed greater than 3.4% decrease in thickness; and 5 showed less than 2.0%."—From lab. report.

Abrasion-resistance is but one of the many characteristics closely controlled in the manufacture of Booth "prescription" felts.

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APPLICATION CHART AND SAMPLE KIT... Contains swatches of S.A.E. felt types, with specification tables. Write for it. (No sales follow-up.)



(Continued from page 184)

Stuart Chase, noted commentator and author on economic problems, spoke on "Where do We go From Here", at the dinner meeting. He stated that the major problem facing this country upon the cessation of hostilities centered around the maintenance of employment for American workers, and said that when the war ends there will be "65 millions Americans at work or in the armed services", and that the trend seems to be toward "a gloomy outlook for postwar conditions . . No one knows when the war will end", he said, and the longer the war lasts, the more difficult will be the transition to peacetime here".

1 1 1 TIMBER OPERATIONS SHOWN AT KALAMAZOO

Wayne E. Crotty, Program Chairman, Kalamazoo Valley Association of Purchasing Agents, arranged for a moving picture showing of West Coast Lumber Operations by Milton Bailey of the Bulkley Dunton Co., at the September 30 meeting in the Columbia Hotel, Kalamazoo, Mich.

CONTROLLED MATERIALS PLAN AT CHARLESTON

E. J. McClees and H. M. Little of the Charleston W. Va. WPB office, discussed new material controls and regulations with members of the Tri-State Purchasing Agents Association at their recent meeting in the Kanawha Hotel, Charleston.

EDITOR ADDRESSES NEW ENGLAND MEETING

Erwin D. Canham, managing editor of the Christian Science Monitor, was the principal speaker at the October 11 meeting of the New England Purchasing Agents Association, Boston, Mass., his subject being "The Newspapers and the War". Eleven new memberships were approved at this meeting along with five transfers.

PRESIDENT NEWBERRY OF NATIONAL AT DAVENPORT

President Ben. R. Newberry of the N. A. P. A., was guest speaker at the October 12 meeting of the Tri-City Purchasing Agents Association (Davenport, Rock Island and Moline), held in the Hotel Blackhawk, Davenport, Ia. Emil H. Jones of the E. R. Wagner Mfg. Co., Milwaukee, vice president of District No. 3 of the National Association, also spoke briefly.

VARIETY IN OREGON SUBJECTS

The Controlled Materials Plan, General Discussion of latest National Association releases, and talks by Major Willis Bergen on the Northwest Territory developments, and by Major L. E. Knerr on scope of the work now under direction of the U. S. Engineers in the Portland District, featured recent weekly meetings of the Purchasing Agents Association of Oregon in the Heathman Hotel, Portland, Ore.

INAUGURATE PURCHASING PRINCIPLES FORUM

New York Assistants' Club Also Hears Talk on Transition Period Which Speaker Says Has Commenced

Stuart Heinritz, editor of Purchasing Magazine and Dr. H. E. Leudicke, Director of War Controls Department, Journal of Commerce, New York, where the principals in the discussion of highly interesting and important subjects at the October 12 meeting of the Metropolitan Purchasers' Assistants Club, held in Midston House, New York, N. Y.

Editor Heinritz inaugurated a series of

forum discussions on "Purchasing's Function in Industry", based on the series of articles currently appearing in Purchasing Magazine under the title "Basic Principles of Purchasing". Mr. Heinritz emphasized the indispensability of "selling" the Purchasing Department to other departments and executives of the company as being one of the most important jobs (Continued on page 272)

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METROPOLITAN PURCHASERS' ASSISTANTS CLUB

Left to Right: Robert Condit, Finance Chairman; Geo. McShane, Acting Secretary; Bert Westa Jr., Chairman of the Board; C. H. Berry, President; Andrew Guenthner, Chairman Education Committee; J. B. Wuehrmann, Vice President; T. H. Masters, Chairman, Lecture Committee.



SAVED BY THE THOUSANDTH PART OF A DUCK

Down comes a Focke-Wulf in a screaming dive, while the Duck's "land legs" churn sand and water for seconds that seem to last forever!

Thousands of parts make the big Duck "walk". Piston, connecting rods, agile on oil-rinsed bearings, pour power to straining gears and drive shaft. Vibration tests each metal fastener.

The wheels still sink, dig deeper—then, seconds later, get firm hold... Bullets lash the surf scant yards behind.

Perhaps you helped to save the boys who

rode the Duck that day... Perhaps a few minutes' extra care some months ago, the time you took to check and double-check some tiny part, an extra thought you gave to better, faster machines and methods—helped keep that amphibian roaring on to victory... For—every part, down to the smallest, counts.

At R B & W's three great plants where millions of big and little fasteners are made each day, we workers realize how much each bolt, nut, screw or rivet may count for life or death on a distant

shore or sea... how much is gained from R B & W's special manufacturing processes, its vast production facilities coordinated in a hard-driving campaign to help get this war over quick!

If you would like the workers in your plant to feel with us this keener sense of battle-urgency, we will gladly send the picture and story of the Duck in poster form. Write us. No advertising matter—and the poster's free. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

RBEW Making strong the things that make America strong



LET 'ER ROLL!





Production lines, like railroad lines, must keep vital war material maving. That's why so many wartime industries have taken a tip from the railroads and installed "block signal systems" of their own... featuring production forms printed on the six easy-to-see, hard-to-overlook wartime colors of

HOWARD BONG

Also available in White and Ivory .

or letterheads

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THE WHY OF PAPER SHORTAGE

Paper is Replacing Steel, Aluminum, Tinplate, Rubber Silk, Plastic and Other Materials

PAPER, one of the most versatile materials of the war, is finding new uses undreamed of in peacetime.

In the production of many military and essential civilian items, paper is now replacing steel, aluminum, tinplate, rubber, silk, plastics and other materials. In many products, it is proving not only satisfactory but actually superior to

the original materials.

Because of the decreased production of pulpwood, the basic material used in making paper, and the increased demand for paper products, many civilian uses of paper have been restricted. Under the recent WPB conservation order M-241a. curtailing unessential products, the manufacture of a number of paper articles is forbidden and the production of many other items restricted. Most of these limitations range from 80 to 110 percent of the 1942 rate of operation. Production of certain products essential to the war effort or the civilian economy is unlimited. It is estimated that from 250,000 to 300,000 tons saved from less-essential production will be utilized to far better advantage in meeting the present war requirements and vital civilian needs.

Possessing the unusual characteristics of being adaptable for use either in disposable goods or in

Paper finds many new uses undreamed of in peacetime. This article delineates its versatility in— Military Uses

Substitute Uses
Textiles and Footwear
Electrical and Radio
Household Appliances
Industrial Uses

Containers and Wraps

semi-durable goods, paper can be formed or molded into almost any shape, structure or design.

Startling new examples of paper's versatility as a substitute for more critical materials can be found in a current exhibit by the War Production Board's Paper and Pulp Division in Washington, D. C.

The War Products Development Section of WPB's Pulp and Paper Division serves as a clearing house between the industry and the war agencies, in the exchange of technical data and ideas. In this way, the industry is effectively pooling its energies in the development and production of worthwhile paper materials and products both military and non-military.

Representing the collective efforts of the industry's technologists, the WPB exhibit of paper and pulpwood base materials includes displays of military items, packaging materials, articles fabricated from paper-base plastic, wearing apparel, household appliances and furnishings, items of hardware, farm supplies, and special papers.

Military Uses of Paper

Included in the display are such military items as shell containers; gun covers and ordnance wraps; shell grommets, bomb rings and practice bomb fins; gas mask canisters and hand grenade containers; detonator inserts, ammunition wadding, and primer paper; flare spacers and antitank mine parts; bomber insulation and jettison tanks; litter covers and emergency paper stretchers; surgical dressings; delousing bags; gas detection arm bands; and laminated fiber helmets; aviator's vests.

When the Armed Forces needed a map paper that would not disintegrate when immersed in water, industry produced a map paper that can be soaked by rainfall or immersed indefinitely in sea water,

(Continued on page 190)

No

Tank commanders and pilots needed maps that they could read during night battles without illumination. Special papers that can be printed with fluorescent ink were made available for this purpose.

A tremendous tonnage of paper and paperboard is required for ordnance shell containers, waterproof, light and strong. To meet the needs of the Army, the paper industry has developed a durable water-resistant shipping container, commonly referred to as the "V-Box" or "Victory-Box", built strong enough to withstand rough handling and prolonged immersion in water. Paper ration boxes and Carlisle First Aid Dressing packages are a standard issue to every American combat soldier the world over.

The Army makes use of disposable paper-gun-covers and equipment wraps made of treated paper, to protect weapons and equipment in transit and while making landings. There are limited uses for waterproof flexible camouflage paper which possesses high wet strength and fade resistance. Practicable uses of small paper parachutes built of creped kraft as carriers of small cargoes and recording instruments are being tested.

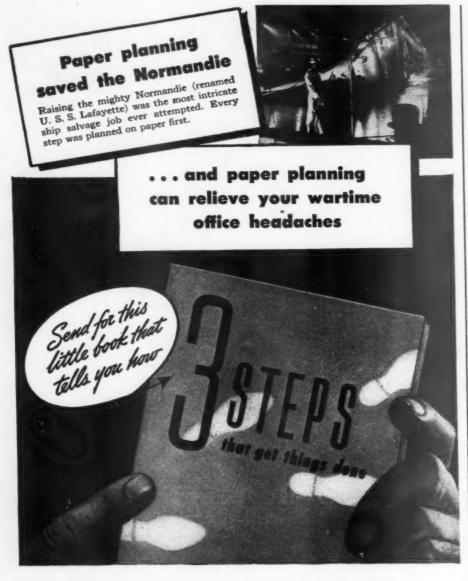
Containers and Wraps

The heavy demand for pulpwood products has resulted in a shortage of fiberboard material for containers, particularly heavy shipping containers. To help meet this situation the Containers Division of the War Production Board is planning a national Container Re-use Campaign.

Manufacturers' samples indicate that besides doing its normal big job in the container field, paper is replacing tin cans and boxes; metal pails, tanks and drums; wood boxes and crates; fiber sacks; tinfoil; and even glass bottles and jars. There are molded containers of different sizes and shapes; dispensing containers; paper sifter tops for cans; bushel paper baskets; utility pails and buckets; and numerous new types of consumer packaging for food, drug and toilet articles.

A number of chemical products and such commodities as asphalt. tar and roofing compounds, which were formerly packed in metal drums, are now handled in fiber drums and multi-wall paper and fabric sacks. In the synthetic rub-

(Continued on page 192)



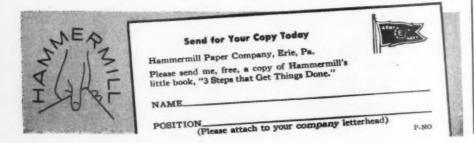
Just off the press! This new little Hammermill book, "3 Steps that Get Things Done," shows how to relieve manpower shortages, get better work from green help, smooth muddled office routine, save wasted hours with printed forms that work.

It contains definite suggestions. Packed with office-tested ideas on how to Plan... Supervise... Follow Through...it shows how easy it is to meet

stepped-up wartime pressures, route information to your staff, keep your desk clear for the important jobs by "Putting it in Writing"—on paper.

Send for this business timesaver today. It's free.

"KNOW HOW"—When you put the ideas in this book to work, Hammermill suggests that you specify dependable Hammermill Bond. Backed by over 45 years' experience, Hammermill papermakers have the "know how" to produce paper that meets the test of business use.



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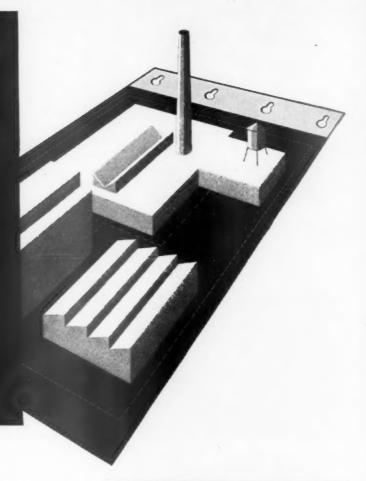
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How to Eliminate Errors in Shipping and Billing Paper Work New folder explains the surer control, single-writing method



One writing can produce all the paper work needed to ship and bill merchandise.

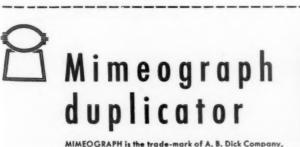
One writing of a Mimeograph brand stencil sheet produces sufficient copies of all requirements, invoices, shippers, packing lists, even receiving and accountability reports.

The speed and accuracy of this streamlined system has meant vast savings in man-hours to all types of American business. Clear, black-on-white copies are produced at speeds up to 150 per minute. And all copies have identical information, assuring shipment of correct merchandise in the right quantity. A. B. DICK COMPANY, Chicago.

6-Point Manpower Conservation Plan

- 1. Save personal calls with bulletins produced by Mimeograph duplication.
- 2. Save gas and personnel by using Mimeograph duplicated copies as your salesmen.
- 3. Speed statistical work with Mimeograph ruled forms that can be made immediately available.
- 4. Use Mimeograph duplicated instruc-tions for personnel training to avoid timeconsuming individual instruction.
- 5. Eliminate delays due to unfamiliarity with business routine by providing Mimeograph duplicated procedure bulletins for all employees.
- 6. Combine several or more paper work functions in one writing by analysis of your paper work. One Mimeograph duplicator does the work of many typists.

For full details send for free folder



Chicago, registered in the U.S. Patent Office.



A. B. Dick Company, Dept. P-1143 720 West Jackson Boulevard, Chicago 6. Send me a free copy of the folder, "Speedier Shipping and Billing Procedures."

NAME			*			,	*	٠							•	*	*				*

COMPANY							*		*							*	

CITY..... STATE.....

No



OUTSTANDING FEATURES OF ACE'S NEW WARTIME STAPLER



- 1. Precision engineered
- 2. Rugged, durable, long-lived
- 3. Efficient, dependable operation

Purchasing stapling equipment should not be a hard job for any purchasing agent. The chances are that his firm has used Ace's pre-war staplers and staples. From experience he knows why Ace is the leader in the stapling industry.

Although lighter in weight Ace's New Wartime Model No. 402-V is built by the same precision engineers, by the same skilled workmen, from the finest materials obtainable. This is your best assurance of getting a machine that measures up to the Ace tradition. SHIPMENTS WILL BE ALLOCATED TO THOSE QUALIFYING WITH PRIORITY RATINGS.

ACE FASTENER CORPORATION 3415 North Ashland Ave., Chicago 13, III.



(Continued from page 190)

ber program the crude product is being shipped in corrugated boxes with special coating liners which permit the rubber to be removed from the cases without sticking.

Gasoline, oils, greases, fats and other substances are now packaged in paper containers, either multiwall bags replacing burlap, or paper cans, bottles and cartons.

Paper twine made entirely from cellulose is now used to a wide extent. This twine has about 50 percent of the strength of hard fiber twine of the same sizes but knots well and is serviceable.

In Substitute Uses

Paper is becoming increasingly important in many rural areas. In communities where scrap lumber for making boxes and crates is scarce some packers are now using fruit and egg crates made of corrugated paperboard, with collapsible construction, specially designed and reinforced to give strength and durability. Crates are shipped from factory to growers in "knocked down" form to conserve shipping space.

Other farm goods now obtainable in fabricated or molded paper and paperbase plastic include such items as sanitary poultry feeders and housings for electrical chicken brooders. Paper binder-twine for bundling grain has good strength, knots well, and used in conjunction with hard fibers will be a necessity for crop growers next year. This is one of the leading developmental projects in the industry. Fibers formerly used were from lands now under enemy control.

Textiles and Footwear

Some of the paper substitutes for textile materials are established products while others are in the trial stage.

Paper vests have proved to be the best suited of paper clothing for use by aviators, and ground crews. The garment is used by the Naval Air Training Stations in preference to other types of aviator's vests. It is regarded as superior because of the slow convection of air, thus protecting against too rapid changes in body temperature. It stands somewhere between rubber and wool garments with respect to the rate of evaporation of perspiration.

Paper blankets are apparently satisfactory, but are not used by the Army. They consider them unsuitable for overseas service because of

the extra shipping space required for expendable materials. Gas resistant litter covers, however, are an accepted paper application.

The Army is also experimenting with a special design of tropical helmet for non-combatant wear by troops in desert and tropical zones. This is a fiber base material combined with fabric cover.

Disposable sanitary papers such as napkins, wiping cloths and toweling, with recently developed qualities of wet-strength, have become a wartime necessity. The qualities of absorption and disposability recommend paper as a substitute material as surgical papers, including disposable hospital sheets, dental napkins, surgical dressings, absorbant wadding, and sterile bandages.

In the civilian clothing field we find such miscellaneous items as mechanics aprons, shoe shanks, arch supports, shoe midsoling, heels, innersoles, counters, heel casings, and tuck material.

Electrical and Radio

Paper, especially in the form of molded paper products, is doing a big job in the electrical and radio fields although some of the samples displayed in the WPB exhibit are experimental. Among the items are all sizes of fiber conduit; fiber connectors with rubber rings; fiber caps and elbows; radio speaker housings; protector for loud-speaker magnet; speaker cones; flashlight holders and cases; electrical fence controllers; insulator boxes; panel boards; reflectors for lighting fixtures; telephone sets and instrument cases.

Household Appliances

Many items of hardware formerly molded or stamped from metal are now available in the new paper base plastics and laminates. Handles for tools offer an especially promising field for the plastics.

Household appliances from disposable cooking plates to kitchen garbage dispensers are included in the Washington display. Among other items are ash cans; refrigerator panels; clock cases; light reflectors; paper-towel holders and toweling; dust pans; trays; paper rugs and paper matting; tissue paper cords; plastic-covered paper buttons; paper bowls and disposable paper plates; teabags; paper-base plastic kitchenware; knife handles; and disposable napkins and cloths.

In the building industry asbestos-(Continued on page 194) d

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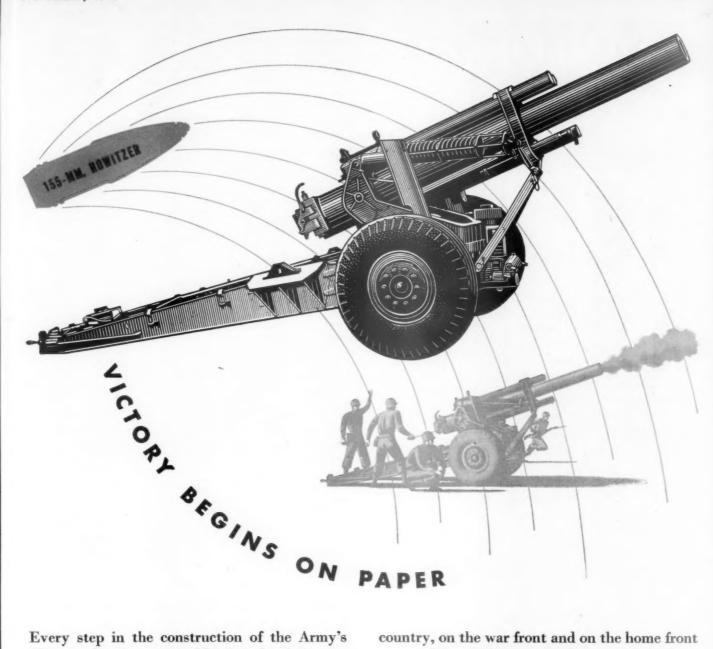
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Every step in the construction of the Army's 155-mm. howitzer, now blasting the Axis, was begun—on paper!

From the first tentative equations of the stress-engineer, from blueprints to inspection charts, paper cleared the way for its design, its construction, its assembly, and, finally, its shipment from arsenal to convoy to invasion

Hamilton Papers are in the service of our

country, on the war front and on the home front . . . and for civilian needs that are vital, these "good papers for good business" will be available to meet those needs.

Rely on Hamilton merchants the nation over to help you, but Victory must not wait for lack of paper.

W. C. Hamilton & Sons, Miquon, Montgomery County, Pennsylvania... Offices in Chicago and New York.

PAPERS GOOD BUSINESS



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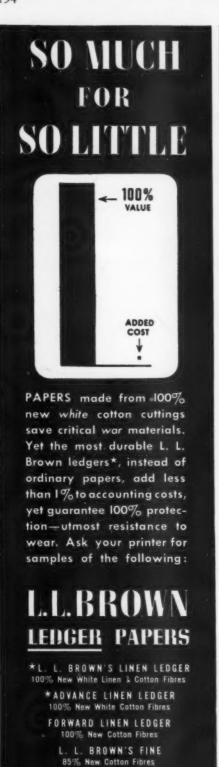
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GREYLOCK LINEN LEDGER

75% New Cotton Fibres

ESCORT LEGGER & MACHINE POSTING

50% New Cotton Fibres

L. L. BROWN PAPER CO.

ADAMS, MASS.

* Permanent Papers

lined laminated paperboard hot-air ducts for domestic heating systems have made their appearance. Other builders' items displayed include pressboard products, creped wadding for insulation and various new

(Continued from page 192)

building and sheathing papers.

In the printing and office supply field there are such unusual items as gas and flameproof paper; paper desk trays; paper clips stamped out of paperboard, paper binders and rings for looseleaf books; and paper lithomats and photomats to conserve critical materials such as aluminum

in offset lithography.

Examples of the use of paper in the automotive field include gasket and packing holders; fiber dustguard and dust guard wedges; dust covers for motors; auto radio parts; automobile engine oil filter cartridges; filters, ignitor protector caps; and aircraft fittings and parts.

Other displays in the exhibit range from paper ice cream freezer cans to paper box springs. There are textile spools, traffic signs; substitute material for rubber sheeting; belt ends; oil proof aprons; tubing and fiber pipe of various sizes; meteorological balloons; impregnated chipboard pipe sections; and metal-surfaced laminations.

Production Restriction Lifted

Among the wartime uses of paper that promise to endure in peacetime are those that have stemmed from the development of paper-base plastics and high-strength, low pressure, laminated paper products.

Impregnated papers in the form of laminates have been used for a variety of purposes for many years. They have been made mostly at high-pressures, and their strengths, while good, have not compared with the light metal alloys. The new types of paper-base plastics, however, can be laminated or fabricated at pressures considerably lower than those previously employed, and they have the added qualities of lightness and high-strength. The strength characteristics of these laminates indicate that they can be permanently substituted for metals in some applications. In many respects these materials compare favorably with plywood, fabric laminates, and the light metal alloys.

The present scope of paper's use as a substitute material is limited by the supply of paper itself. Today paper and paper products are placed in group two of the Material Substitutions and Supply List, midway between the critical materials and those materials which are sufficiently available to serve as substitutes in essential applications.

Recently, production quota restrictions on paper and paperboard were lifted. In the new program each producer will be encouraged to manufacture as much paper as he can from the pulpwood allocated to him, using substitute fiber wherever possible and any other device to increase production.

PEN AND PENCIL PRODUCTION IMPLEMENTED

L-227 Revised and L-227-a and L-227-b Issued

To implement production of fountain pens, mechanical pencils, pen nibs and wood cased pencils and pen holders for essential requirements the War Production Board announces revision of Order L-227 and issuance of Orders L-227-a and L-227-b.

Simplification of restrictions as well as methods of granting quotas for production of these items for claimant agencies other than civilian was effected by this action.

Order L-227 which previously controlled production of fountain pens, mechanical pencils, pen nibs and wood cased pencils and pen holders now controls only fountain pens and mechanical pencils. Order L-227-a was issued to cover pen nibs and Order L-227-b was issued to control wood cased pencils and pen holders.

Under the terms of Order L-227-a and revised Order L-227, after October 1, 1943, production and distribution of fountain pens, mechanical pencils and pennibs to fill special orders, which includes orders for the Army, Navy, Maritime

Commission, War Shipping Administration, the Government of Canada, Lend-Lease and for export items covered by a license issued by the Office of Economic Warfare, must be specifically approved by the War Production Board on Form WPB-2719 (formerly PD 880). Each manufacturer must file this form with the War Production Board on or before the 15th day of March, June, September and December, showing his proposed production and delivery.

Production of fountain pens, mechanical pencils and pen nibs for general distribution will be on the basis of a certain percentage of each producer's 1941 production. After October 1, 1943, a manufacturer may now make fountain pens, each quarter, to the extent of 5½ per cent of the steel pen nib fountain pens, 7½ per cent of the gold pen nib fountain pens, and may produce 5 per cent of the mechanical pencils and 18½ per cent of the pen nibs he produced during 1941. Order L-227 previously established over-all production quotas which included production for all

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GET READY FOR '44!

Post-war planning will largely depend on the records you keep today. Those records must be kept accurate ... and immediately available at all times! As records grow ... and how they do in these war times ... they must be housed properly!

No longer need your file opera-

tors struggle along with inadequate, makeshift filing equipment! Their speed and accuracy can now be greatly increased by the addition of a few new GUARDSMAN wood files.

Yes, now!...for GUARDSMAN cabinets are ready for immediate delivery... without priority! Not just in four or five styles but in every type and size... and they look exactly like steel cabinets. We have on hand the world's most complete line of wood filing cabinets...priced right to provide amazingly low cost per filing inch!

The GUARDSMAN is not a "substitute for the duration"! Ingenious construction details have made this a product of skilled craftsmanship... built for many years of trouble-free performance. Small wonder that hundreds of business concerns have chosen GUARDSMAN after exhaustive competitive tests.

Call our nearest branch office today and tell them when you'd like your files delivered. Or, if you prefer fuller information, write for your free copy of "Filing Equipment in Wood"—a complete description of GUARDSMAN in every style,

IMMEDIATE DELIVERY of GUARDSMAN Filing Cabinets

REMINGTON RAND
BUFFALO 3, NEW YORK

Announcement

About December 1st, Parsons Gothic Bond will be watermarked and advertised as Parsons Bond. Our high quality group will then be identified by the Parsons name.

Parsons Bond

Parsons Linen Ledger

Parsons Index Bristol

Parsons Diploma

These papers are being made from 100% new cotton fibers and every care is taken in their fabrication to insure the maximum of serviceability and permanency.

PARSONS PAPER COMPANY, HOLYOKE, MASS.

Parsons Paper Specialized for Modern Business

(Continued from page 194)

purposes. Production for Army, Navy and other special claimants was not con-

sidered separately.

Order L-227-b continues production of wood cased pencils and pen holders for all claimants on a quota basis. After October 1, 1943, a quarterly production for each manufacturer of 20¼ per cent of the number of wood cased pencils and 24 per cent of the number of pen holders he made during 1941 is permitted. Previous restrictions under Order L-227 permitted production of 22 per cent wood cased pencils and 31¼ per cent of the pen holders produced by each manufacturer during 1941.

PARTS FOR PENCIL SHARPENERS

The C. Howard Hunt Pen Company announces that the War Production Board has granted it permission to use semifabricated materials in their inventory to produce repair parts for "Boston" Pencil Sharpeners for a period of 90 days. These parts are to be sold for replacement purposes only.

PAPER AS SUBSTITUTE FOR METAL

Can paper be used successfully instead of metals for auto number plates and many other outdoor uses for which metals heretofore have been exclusively used? A good answer to this question is found in the case history of a piece of Resistall



Good as new after 30,000 mile trip

Index Bristol product of the L. L. Brown Paper Co., Adams, Mass., which was attached to the bumper of an automobile (as illustrated) and given a 30,000 mile ride through eleven Pacific Coast states where it was subjected to the scorching sun of the desert in midsummer and to the intense cold of mountain climate in dead winter. During this ride it was subjected to rain, snow, sleet, grime, mud, grease and slime for a period of 18 months. It was left undisturbed when the car was washed periodically. A companion piece of the paper was placed in the license number holder.

After their prolonged tough trips both samples evidenced no trace of the ruthless treatment to which they had been subjected. Each was apparently just as

(Continued on page 198)

"Anybody remember what Tomkins owes us?"

We'll wager they don't even come close, for memories are notoriously fickle.

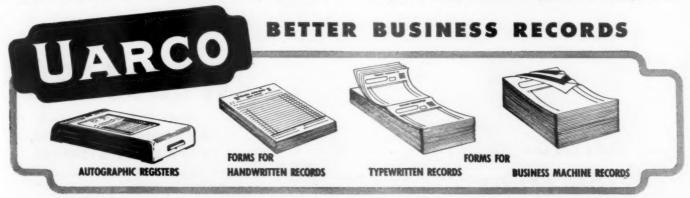
What they need are records—accurate records that get things down in black and white . . . correctly—eliminate guesswork—cut waste and red tape . . . speed and co-ordinate the flow of vital information.

That's why so many businesses use Uarco's scientifically designed records for purchasing, manufacturing, shipping and office routines. They save time,

money and manpower in today's swift race for Victory . . . are tailored to individual needs.

Perhaps Uarco Records can better co-ordinate and integrate routine in your business, too. If we don't have the right kind of records for you, we'll design them. Why not let a Uarco representative analyze your problem?

UNITED AUTOGRAPHIC REGISTER COMPANY Chicago, Cleveland, Oakland • Offices in All Principal Cities



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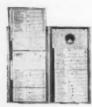
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THE purchasing agent of today needs all the facts at his finger-tips—facts on purchases, prices and inventory, to say nothing of CMP, priorities and WPB directives. Postindex Artwood Record Cabinets and Flat-Books provide price information and record of vendors in a compact, integrated system. Order follow-up is made easy and almost automatic in its operation. Postindex forms simplify the purchasing agent's record-keeping problem. They are less cumbersome in han-

dling, easier posted, more compact and more accessible than any less specialized equipment.





Postindex Artwood Flat-Books afford rapid posting, permit multiple forms. Cards can be shifted at will. Portable.

Send for our free booklet "Purchase Order Control Thru Postindex," giving further information on how Postindex can help make the work of purchasing departments

smoother and easier. Write to Postindex Division, ART METAL CONSTRUC-TION CO., JAMESTOWN, NEW YORK.



Postindex Visible Files (Continued from page 196) strong and durable as at the commence-

ment of its wanderings.

The Resistall papers are especially made to resist time, water, oil, grease and many acids and chemicals, according to the manufacturer, who states they can be soaked in water without disintegrating, can be scrubbed almost endlessly when immersed without scuffing, and when soiled can be washed almost like celluloid. They are extensively used for signs, notices, cards, licenses, and tags. Public notices on Resistall tacked to trees have 'een in service five years without notice-able deterioration.

NEW LINE OF COPYHOLDERS

Warmodel type of Copyholders announced by the Copy Right Manufacturing Corp., 53 Park Place, New York 7, N. Y., is made partly of a material that is as hard as iron, according to the manufacturer, but yet is classed as "non-



Copy Right War Model Copyholders

critical", and therefore complies with WPB restrictions. All vital operating features, however, are of steel as in former units. The War model is finished in black crackle, and fits in behind the typewriter and operates the same as the allmetal units. The use of copyholders is said to save as much as 50% in typing time.

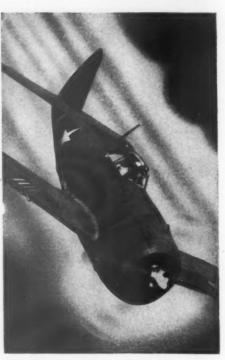
TYPEWRITERS FOR WAR INDUSTRIES UNDER WPB CONTROL

Control of distribution to war industries of all new typewriters in manufacturers' stocks will be centered in the War Production Board, as a result of the amendment of Order L-54-a (typewriters).

Previously, authority to control distribution of certain remaining inventories of such machines had been delegated to the Office of Price Administration. OPA will continue to handle distribution of typewriters in distributors' and retailer inventories and also distribution of used machines.

The amended order provides that war plants in need of typewriters file with WPB applications for permission to purchase from manufacturers on Form WPB-

(Continued on page 200)



MAKING RECORDS

Is your concern making war production records these days? F. S. Webster products are "making records," too, for some of America's most important war industries—for example, Fairchild, Pan American, Kaiser, and DuPont.

Webster's success with leading business concerns is based on two sound principles: 1. The carbon paper and type-writer ribbon requirements of no two concerns are exactly alike. We study your needs carefully — and then recommend the right products to do the job. 2. The only way to win and hold friends is to keep the quality standards high. Through war and peace, prosperity and depression, this has been a steadfast policy of the F. S. Webster Company.

Talk with the Webster field representative the next time he calls. Or if your carbon paper and typewriter ribbon requirements demand immediate attention, write for service and samples to:

WEBSTER'S

7 Amherst St., Cambridge, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches in New York, Philadelphia, Chicago, Pittsburgh, and San Francisto



SUBMARINE CREWS MUST HAVE "UNDER-SEA" COURAGE

Many a brave man and true is found, under modern scientific testing, to suffer from claustrophobia (a morbid dread of confined places). He may well be a hero elsewhere but not on a submarine.

There a man may feel like a fellow fighting in a barrel, but he's got to love it. Must have, too, the constitution of an arctic whale, the ingenuity of a small-town electrician—and withal be quick and deadly as a conger. No wonder our submarines are a growing terror to our enemies.

International Mimeo Script and International Duplicator Paper are "picked for the job" because they both give maximum speed production for duplicating work. International Duplicator Paper is ideal for gelatine and spirit processes. They, too, can take it.

Back the Attack with War Bonds



220 EAST 42nd ST.

NEW YORK, N.Y.

Papers for Printing and Converting

No



HAVE SEA A LOOK AT THE RECORD

Important records go down to stay, in history and in business. But where the classic achievements of the ancients, laboriously carved in marble, were difficult to

handle, today's Classic records are created and handled with speed and ease. Modern Classic, contributing outstanding beauty to business correspondence and record keeping, is a superb typewriter ribbon by Columbia.

Classic Typewriter Ribbons are finer — for fine work. There's no smudge or smear to beautiful, dignified Classic typing. They give exceptionally long wear, hence offer economy plus beauty.



Call your dealer, or the Columbia Office in your city for this "Classic opportunity".

Classic

TYPEWRITER RIBBONS
a product of

C O L U M B I A R I B B O N & C A R B O N MANUFACTURING CO., INC.

Main Office & Factory Glen Cove, L. I., N. Y.

NEW YORK • KANSAS CITY, MO. • CHICAGO • DETROIT • MILWAUKEE • MINNEAPOLIS • NASHVILLE • PHILADELPHIA • PITTSBURGH • CINCINNATI (Harris-Moers Company)

Also: London, England; Sydney, Australia

ORGANIZE LONG SERVICE CLUB

Combined Service of 67 Employees Totals 1825 Years— Three in Half-Century Group

The inauguration of the M & V Long Service Club was the outstanding feature of the annual stockholders dinner recently held by Mittag & Volger, Inc., manufacturers of carbon paper and inked ribbons, Park Ridge, N. J. Sixty-seven employees master of ceremonies at the dinner. Appropriate 14-K gold service buttons were presented to each of the 67 members. The three half-century members were also presented with properly engraved diamond rings. Solid gold 21-jewel watches were



OFFICERS AND DIRECTORS, MITTAG & VOLGER, INC.

Back Row: (Left to right) Paul L. Foster, Robert A. Stark, Vernon G. Stark, Lester E. Mittag. Front Row: Ira Cole, President, Thomas G. Forbes, Harry S. Stark, Leroy D. Dixon.

were initiated, whose combined years of service reached a total of 1825. Three of these are in the half-century class, 9 in the 40-year class, 21 in the 25 year class, and 34 in the 15-year class. Qualifications for membership call for an accumulated service of 15 years or over.

The three members of the half century class include George E. Dyson, manager of the St. Louis, Mo. branch; J. N. Jersey, foreman of Roll paper carbonizing department; and Harry S. Stark, director and former treasurer.

nd former treasurer.

The nine members of the 40-year class

presented to the 40-year members, and filled gold 21-jewel watches were presented to the 25-year members.

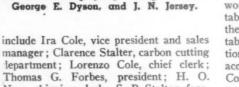
The Mittag & Volger company was founded in 1881 by Frank O. Mittag.

TYPEWRITERS FOR WAR INDUSTRIES UNDER WPB CONTROL

(Continued from page 198)

1688. Application from any other civilian source will not be considered and officials requested that only those war plants in urgent need of machines submit applications.

A special evening course in statistical machine operation is being offered by the City College School of Business, 17 Lexington Avenue, New York. It is designed to give students a thorough knowledge of the uses of tabulator machines in industrial operations, including laboratory work in plugboard wiring and general tabulating operation. Upon completion of the course trainees are able to start as tabulating machine operators on production control work, cost analysis, general accounting and simple statistical studies. Courses in Traffic Management are also available.



Thomas G. Forbes, president; H. O. Neer, shipping clerk; S. B Stalter, foreman of mill room; W T. Mead, foreman of carbon coating department; Robert A. Stark, vice president and assistant superintendent; and R. A. Bullock, Chief engineer and stockholder.

Among the 21 members of the 25-year

The Half-Century group: Harry S. Stark,

Among the 21 members of the 25-year class are Secretary and director Lester E. Mittag; Director and former president, Frank O. Mittag, Jr.; and Willis C. Witte, manager of the Boston branch.

President Thomas G. Forbes served as

DESIGN SERVICE ON FORMS

Changing the size of the forms reduces the quantity of paper used; offers savings in the cost of the forms and a proportionate saving of postage; grouping of various forms cuts down filing space; eliminates unnecessary copies of forms; chang-

(Continued on page 202)

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How Vital Control Problems are being solved in War Industry

YOU MAY ARRANGE FOR PRIVATE SHOWING IN YOUR OWN OFFICE

MAIL COUPON TODAY!



SEE HOW an industrial plant overcomes bottlenecks of incoming materials while safeguarding itself against shortages or inferior quality.



SEE HOW a complicated stock-issuing problem that wasted the time of 350 people was concentrated and simplified to a two-man job!



see How a leading manufacturer made a 25% time saving in starting work on an order and in getting material promptly to machines.

0



SEE HOW other companies are speeding production, saving time and expense through applying vital principles of basic control. "Everything Under Control" is the brief, graphic result of a nationwide study into the control problems common to wartime industries—new products, new methods, shortages of time, materials and trained workers—inadequate management control over cost, operations, and production.

The film reviews actual cases of how American manufacturers have stepped up production, increased efficiency, saved time, eliminated waste—by the application of a vital factor of basic control to operations throughout industry, from purchase and receipt of materials to shipment of finished product. It may well suggest the specific answer to problems of your own, through better and faster primary control over all the functions of purchasing, receiving, storing, production, selling, shipping, billing, accounting, payroll and personnel.

As part of Standard's War Service Program, this film is now being presented by our representatives to company executive groups by appointment. Due to the demand, we are compelled to limit showings currently to leading war production industries. We will be glad to receive your invitation to present "Everything Under Control," without obligation, at the earliest possible date.

THE STANDARD REGISTER COMPANY • DAYTON 1, OHIO
Pacific Coast: address Sunset McKee-Standard Register Sales Company, Oakland, California;
Canada: Crain Printers, Ltd., Ottawa, Ontario; Great Britain: W. H. Smith & Son, Ltd., London



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	DARD REGISTER COMPANY ilbany Street, Dayton I, Ohio
Please send u to see it at o	us more information on "Everything Under Control" and how we can arran our convenience.
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IN PAPERS

are Essential to MODERN BUSINESS

> to reduce Office and Factory expenses.

> > Specify one of

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

Recommended for Thin Letterheads, Copies, Records, Advertising.

Ideal for Air Mail, Branch Office and Foreign correspondence.

SEND FOR SAMPLES

ESLEECK

Manufacturing Company Turners Falls, Mass.

STATIONERY CONSERVATION IN WASHINGTON

Special Order Issued on Papers and Envelopes

Roland M. Brennan, Purchasing Agent for the Government of the District of Columbia, who as Conservator is in charge of the District's recently inaugurated Conservation Program (see special article in this issue of PURCHASING), recently issued the following order to the heads of the various departments of the District, looking to the conservation and prevention of waste incident to the use of letterheads, envelopes and other stationery

'The Board of Commissioners on September 20, 1943, decided to adopt the provisions of Regulation Number 4 of the Bureau of the Budget, dated August 28, 1943, insofar as the various activities of the Government of the District of Columbia are concerned and to the extent that said Regulation Number 4 applies to the use of letterheads and envelopes.

"Hereafter Letterheads shall not contain the name of any individual thereon, but will show the name of department or activity and the address, where necessary, and all postal zones required. The "Minute-Man" emblem, or any other symbol authorized for use, shall be placed in the upper left-hand corner of both sizes of letterheads, or in the upper right-hand corner in those cases where a seal or symbol of an agency is used in the upper left-hand corner. Only two sizes may be used; namely 8 x 101/2" for letters requireing a full sheet and 8 x 51/4" for letters requiring only a short sheet.

"Envelopes for correspondence will be available only in size 35%" x 6½", which size shall be used whenever practicable, and such envelopes must be used with 8 x 51/4" letterheads.

Continuation Sheets should be on plain

bond paper, size 8 x 101/2"

Office Memorandum Forms: The printing of memorandum slips is discontinued and all memoranda shall be on plain white paper, and if necessary, the name of the department typed, rather than printed, thereon; or inter-office reference slips may be used.

"Paper: Due to the scarcity of various types of paper, the Division of Printing will exercise its judgment in substituting weights of paper to be used in the printing of forms and when deemed necessary, the Division of Printing will contact the department concerned if the change contemplated is believed to be too drastic. The Division of Printing will endeavor to meet the requirements of all agencies, whenever possible.

"Attention is invited to the following changes in paper stock, procurable under War Production Board restrictions, and departments will be governed accordingly

when ordering blank paper:

"(1) Mimeograph paper shall be restricted to ground wood, weight basis, 1,000 sheets, 32 and 36 nounds

"(2) Writing Paper restricted to ground paper, weight basis, 1,000 sheets, 32 and 36 pounds.

"(3) Bond paper restricted to chemical wood, 25% rag, and 100% rag, weight basis, 26 and 36 pounds.

"(4) Ledger paper restricted to chemical wood, 25% rag, and 100% rag, weight basis, 48 and 56 pounds.

"(5) Index paper is restricted to chemical wood, 50% rag and 100% rag, weight basis, 148, 182 and 230 pounds."

DESIGN SERVICE ON FORMS

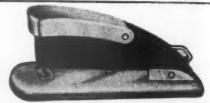
1 1 1

(Continued from page 200)

ing the arrangement of forms obviates folding before inserting into envelopes; printing standard information on forms saves countless typewriter strokes: replacing and respacing headings eliminates typewriter carriage shifts; and many other noteworthy savings have been figured out by Egry forms engineers.

The Egry Register Company, Dayton, Ohio, advises that the services of their forms engineers are available without cost or obligation to those desirous of having their forms redesigned, of having new forms suggested for the handling of all handwritten and typewritten records.





STAPLERS STILL AVAILABLE On Priority Orders.

Essential industries needing paper FASTENERS and TACKERS can still be supplied.

Model S 122A shown above lists for only \$1.90.

Write for catalog

STAR PAPER FASTENER CO., NORWALK, CONN.



When you want to know GO TO AN EXPERT



It's logical, isn't it, to ask your printer's expert opinion when you want to know what brand of paper to use for your office letterheads?

We'll stand on his decision. We feel we can afford to, having for years supplied the experts in the business with fine papers for every printing purpose. He'll also tell you that the extra prestige of Rising quality doesn't cost you a penny more.

Among others: Rising Bond (25% rag), Rising Line Marque (25% rag), Finance Bond (50% rag), Rising Parchment (100% rag). The Rising Paper Company, Housatonic, Mass.

ASK YOUR PRINTER-HE KNOWS PAPER

No

Burroughs' intimate knowledge of business machines in action established the exacting specifications of quality which have always been characteristic of Burroughs supplies for business machines of all types and makes.

These supplies are available to you under Burroughs Discount Purchase Plans at savings of 10% to 40%. You enjoy the best in these fine supplies (and, incidentally, save storage space) because Burroughs delivers them fresh to you as you need them.

For full details, call your local Burroughs office or write Burroughs Adding Machine Co., Detroit 32, Mich.



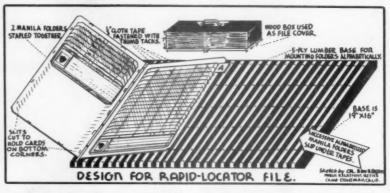
Burroughs
SUPPLIES FOR
BUSINESS MACHINES

SERVICEMAN EVOLVES CAMP FILING SYSTEM

The accompanying diagram shows details of what is termed a time-saving Locator Filing System evolved by 1st Lt. Irving Bennett for use in a battalion at Camp Stoneman, Calif. It consists of manila folders and what are known as

along the side or placed flat on a board with the backs of the folders side by side. Fifteen folders sufficed for the entire Stoneman battalion.

The file has proved practical for numerous uses, and among other things has



Locator Cards (WD AGO Form 304A). The file is made by taking manila folders and marking them into sections. Slits are then cut on each folder. The tops of the locator cards, obtained from machine record units, are fitted into these so that only the top of each card is visible, and along this top appears the name, serial number, grade, organization, etc., of the person for whom the record is made.

About 40 cards are adapted to a page, blank spaces being left at the end of each page and each letter group to allow for increase in personnel. The folders can be made into a notebook with index tabs

proved advantageous for mail clerks who formerly used roster sheets, and who find that it is easy to read and readily changed.

TESTIMONIAL DINNER TENDERED ALAN M. RAVENAL

Employees of the Elbe File & Binder Co., Fall River, Mass., recently tendered a testimonial dinner to Alan M. Ravenal, president of the company, commemorating his 25th anniversary as head of the organization. A bronze plaque marking the

(Continued on page 206)

HE'S "THAT WAY" OVER HILL BUSINESS CARDS



Here's a purchasing agent who's in love with his job! And you would be too after doing business the R. O. H. Hill way...it's easier, cuts out extra expense, and saves plenty of headaches!

You make no investment in master stock, need no inventory records—you pay-as-you-go, yet get a wholesale price. And it's quick service, too. One-color orders go out the same day they reach our plant... direct to the user to eliminate double handling. The cards are packed in our Special 25-card Economy Cases to keep them clean and cut waste from dog-earred throw-aways.

Send us your approximate yearly quantities of business cards and letterheads with a sample of each—we'll send estimates and suggestions for their improvement at no obligation.

R.O.H.HILL,INC.

270 Lafayette Street, New York 12, N. Y. Tel. CAnal 6-6340

Makers of Fine Business Cards and Letterheads Since 1914 Engraved or Thermographed



Official U. S. Navy Photograph of fighter planes on a carrier deck

Enlist your dollars . . . Buy War Bonds . . . To shorten the duration



Underwood Typewriters

Underwood Sundstrand

Underwood Elliott Fishe

TO OUR MILLIONS OF VALUED CUSTOMERS:

Accounting and Adding Machines are available under WPB regulations.

Typewriters are available for rental to anyone.

Maintenance Service, from coast to coast in 366 cities is in complete and efficient operation for all makes of typewriters, UEF accounting and adding machines.

Ribbons, Carbon Rolls and Carbon Paper—Complete lines are available for all makes of machines.

Copyright 1943, Underwood Elliott Fisher Company



The fast-flying fuel that powers the planes of many of America's intrepid airmen gets its paper work "start" on time-saving Underwood Typewriters and Office Machines.

Throughout the Esso organization they have played a prominent part in the quick handling of office detail required by the company's war effort.

From the "paper work" in the famous Esso Research Laboratories where this Victory fuel was developed to the final orders to Esso tanker captains for delivery "somewhere in the war zones," the unfailing efficiency of Underwood's durable equipment speeds the vital war work of the Standard Oil Co. of New Jersey and its associate companies.

Reports Esso Marketers: "In the last few years many of our Underwoods have had to do double and even triple duty. Our UEF machines have stood up remarkably well, regardless of their age!"

Underwood Elliott Fisher Company

ONE PARK AVENUE, NEW YORK 16, N. Y.

In war production on U. S. Carbines, Caliber .30 M-1—Airplane Instruments—Gun Parts—Ammunition Components—Fuses—
Primers—and Miscellaneous Items.



GIVE THE LADY A HANDsome Instruction Manual!

The girls ain't in there pitching powder puffs, they're punching out parts. They man-handle instruction manuals. Army-Navy-industrial trainees' booklets, parts catalogs, hand-books, all account for the pyramiding sales of KROYDON COVER. It's plenty tough, yet very handsome. It's cleanable with a damp cloth. Extra long fibers assure strength for folding with or against the grain. And Kroydon's glossy, ripple surface can be printed "work and turn." However used and abused, Kroydon Cover will stay right in there pitching and punching for you.

Specimens, Samples? Ask your printer or paper man (Kroydon's a national brand), or write us at the mill. Holyoke Card and Paper Company, Springfield, Massachusetts.

Eight colors now available (six went to war). Two weights. Regular finish mildly ripple.

Special finishes in moderate quantities.

"Tough as a Hippo"

Companion cover lines by "The Cover Paper Mill"

HOUSTON L. S. Boswe KALAMAZOO

TWILTEX

LEATHERCRAFT

DURATEX WOODTONE

PITTSBURGH Alling & Co

KROYDON COVER IS

Nationally distributed through

these recognized Paper

Merchants

Write them for Specimens and Samples

ALBANY
W. H. Smith Paper Corp.
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BALTIMORE
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Jefferson Paper Co.
BOSTON
Arnold-Roberts Co.
Storrs & Bement Co.
BUFFALO
Alling & Cory Co.
CHICAGO
James White Paper Co.
CINCINNATI
Chatfield Paper Corp.
CLEVELAND
Central Ohlo Paper Co.
COLUMBUS
Central Ohlo Paper Co.
DALLAS
Southwestern Paper Co.
DAYTON vestern Paper Co. Southwestern Paper Co.
DAYTON
Central Ohio Paper Co.
DENVER
Carter, Rice & Carpen Central Onio Paper Co.
DEN VER
Carter, Rice & Carpenter
Paper Co.
DES MOINES
Pratt Paper Co.
DETROIT
Central Onio Paper Co.
GEAND RAPIDS
Carpenter Paper Co.
HAMILTON, ONTARIO
United Paper Mills
HARTFORD
Rourke-Eno Paper Co.

MANSAS CITY
Bermingham & Prosser (
LONDON, ONTARIO
United Paper Mills
LOS ANGELES
Zellerbach Paper Co.
MILWAUKEE
Dwight Bros. Paper Co.
MINNEAPOLIS
Wilcox-Mosher-Leffholm
Co.
MONTEPAT MONTREAL, QUEBEC McFarlane Sons & Hodg-McFariane Sons & Hodgson
NASHVILLE
Clements Paper Co.
NEWARE
Lathrop Paper Co.
NEW HAVEN
Storrs & Bement Co.
Rourke-Ene Paper Co.
NEW YORK CITY
Alling & Cory Co.
Lathrop Paper Co.
Millor & Wright Paper Co.
Bulkley, Dunton & Co.
OMAHA
Field-Hamilton-Smith
Paper Co. Paper Co. PHILADELPHIA

worth Co.

m & Prosser Co.

PROVIDENCE, R. I. Storrs & Bement Co. Storrs & Bement Co.
PORTLAND, OREGON
Zellerbach Paper Co.
BICHMOND, VA.
B. W. Wilson Paper Co.
ROCHESTER
Alling & Cory Co.
ST. LOUIS
Tobey Pine Papers, Inc.
ST. PAUL
Wilcox-Mosher-Leffholm
Co.
SALT 1477 Co.

SALT LAKE CITY, UTAH
Zellerbach Paper Co.
SEATTLE, WASH.
Zellerbach Paper Co.
SPOKANE, WASH.
Zellerbach Paper Co. Zellerbach Paper Co. SPRINGFIELD, MASS. Paper House of New England SAN FRANCISCO Zellerbach Paper Co. SAN FRANCE Zellerbach Paper Co. TOLEDO Central Ohio Paper Co. TORONTO, ONTARIO United Faper Mills WASHINGTON, D. C. Barton, Duer & Koch Paper Co. WORCESTER.

(Continued from page 204)

event was presented to President Ravenal by Leo Strickman, secretary of the company.

Another interesting event of the dinner was the organization of a Twenty-Year Club to include employees who have been with the company for a period of over 20 years. Each of the members of this club was presented with a gold-filled Eversharp Skyline pen and pencil set to mark the event.

1 1 1 "THROUGH 100 YEARS" 1843-1943

An elegant souvenir book memorializing its 100th Anniversary, and entitled "Through One Hundred Years", recording by pictures and text the growth of the company since its founding in 1843, has been published by the National Blank Book Company of Holyoke, Mass. Its 92 finely lithographed pages in covers 91/2" x 12" and binding by the National company, artistically decorated with appropriate sketches in color, and photographic pages presenting company personages and views presents the "story of an American achievement" in a very readable, entertaining manner. The preface is a brief review of "Records Through the Ages", followed by the history of the company from its inception on through "the Bound Book Era" and the loose-leaf line, the development of special covers, and today's production of gun parts.

TECHNICAL CHANGES IN PAPER ORDER

Certain technical revisions and adjustments of General Conservation Order M-241-a, covering converted paper products have been announced by the War Production Board.

Among changes effected were redefinitions of certain products not considered as converted products. These include fibre shipping containers of several types and parts thereof; specialty bags, as well as grocery, variety and notion bags, and looseleaf binders. These items are not controlled by Order M-241-a, but are covered by other WPB orders.

Instead of specifically prohibiting the manufacture of a number of paper products, these articles are covered now by a general provision which permits the manufacture of all unlisted paper products at 65 percent of the 1942 quota.

A limitation on inventories to two carloads or thirty days' supply of pulp, paper or paperboard is fixed effective January 1, 1944.

TYPEWRITERS AVAILABLE FOR CIVILIAN USE

War contractors who were required to turn in rented typewriters manufactured since 1935 are now authorized to reacquire these or an equal number of similar machines on a rental basis, the Office of Price Administration announces.

This action was taken because it is expected that as a result of the recent WPB order allowing the manufacture of type-

(Continued on page 207)

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(Continued from page 206)

writers on a limited scale, a larger supply of new machines will now become available. The requirements of the armed forces can thereby be met without their purchasing all of these post-1935 (Class A) typewriters in the hands of the trade.

Because of these changed requirements a larger number of Class A machines will be available for civilian use. Since their manufacture has only recently been resumed, however, it was decided to limit the rental of these later model machines to the people who legally held them on as rental basis last June 6. Those eligible to rent them at that time were certified war contractors only.

The government program to buy Class A typewriters now held on rental by the Army and other federal agencies is planned to be completed by November 30. Therefore, the provisions in today's action are to be in force only until that time, when it is expected that another amendment will be issued to govern future transactions, OPA said.

This action is taken in Amendment to Ration Order 4A (Typewriters).

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GIANT-SIZE DATES ON NEW WEEKLY CALENDAR

With Elephant Size Dates the new Post 1944 Calendar features a weekly calendar pad you can see a mile.

In accord with recommendations from draftsmen and engineers the new calendar



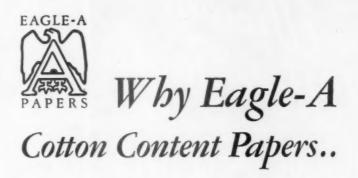
has two big advantages over the extremely popular Post 1943 Calendar—
(1) the giant weekly dates have been placed all on one line for easier reading and (2) a large monthly calendar is included on each sheet.

This new calendar with its 52 weekly sheets is being offered free to those who request it on their business letterhead.

Built on a War Week basis the big black numerals can be easily read from any part of the drawing room. The over-all size is 1534 x 241/2.

And this isn't all. A section of technical data for the engineer and draftsman

(Continued on page 209)



In Eagle-A Papers, cotton content means top quality in paper-making material.

These cotton fibres definitely assure better appearance, greater strength and durability in the finished product. At little extra cost, EAGLE-A Cotton Content Papers lend prestige to fine business stationery and give longer life to important forms and business records.

Therefore, to be sure of the maximum in quality and to aid in the conservation of vital chemical wood fibre—specify these EAGLE-A Cotton Content Bond and Record Papers.

EAGLE-A COUPON BOND-Extra No. 1

EAGLE-A AGAWAM BOND-100% cotton content

EAGLE-A CONTRACT BOND-75% cotton content

EAGLE-A ACCEPTANCE BOND-50% cotton content

EAGLE-A TROJAN BOND-25% cotton content

EAGLE-A CONTRACT RECORD-75% cotton content

EAGLE-A ACCEPTANCE RECORD-50% cotton content

EAGLE-A TROJAN RECORD-25% cotton content

Consult your printer, lithographer or engraver for full information and samples or write us direct.

AMERICAN WRITING PAPER CORPORATION HOLYOKE MASSACHUSETTS

BUY WAR BONDS FOR VICTORY



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PRIVATE SECRETARY FILE

The tempo of business is accelerated by wartime demands. Here is an ideal desk companion to help speed up your work. Eliminates delay in finding essential information.

No. 112 Letter Size No. 115 Legal Size Desk Height—20" Deep Oak and Green finishes

ORDER FROM YOUR DEALER TODAY

Imperial Methods Company



Keep Those Bostons POINTING!



We're still trying mighty hard to resume the manufacture of BOSTON Pencil Sharpeners, and shall continue our efforts toward this end. We have manufactured, by permission of the W.P.B., a limited quantity of famous BOSTON Speed Cutters to replace the worn cutters in sharpeners now in use. Better order replacements for your BOSTONS right away while they are available.

C. HOWARD HUNT PEN CO.,

CAMDEN, N. J.

BOSTON PENCIL SHARPENERS

FINE DIAMONDS

Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.



L. & C. MAYERS CO.

ESTABLISHED 191

Importers of Diamonds and Watches Distributors of Jewelry, Silverware, Luggage and Giftwares

> 545 FIFTH AVENUE NEW YORK

(Continued from page 207)

is included, containing charts on wire and sheet metal gauges, screw threads, etc. The top illustration printed in six colors portrays the dream of many a school boy-that of becoming a designing engineer.

As long as the supply lasts they are yours for the asking. Address your requests to The Frederick Post Company, Box 803, Chicago 90, Ill.

1 1 1

OFFICE MACHINES ADVISORY COMMITTEES ANNOUNCED

Two industry advisory committees, representing manufacturers and dealers in office machines, are announced by the Office of Price Administration. These committees were appointed by OPA for the purpose of consulting with and advising that agency on pricing matters in their field. Membership of the two committees is as follows:

Office Machines Manufacturers Stanley C. Allyn, president, National Cash Register Co., Dayton, Ohio.

7. D. Caton, vice-president, Standard Register Co., Dayton, Ohio.

HOLMESDALE

100%

BOND

DEFIANCE

100%

BOND

20%

DEX

WINCHESTER

100%

INDEX

John S. Coleman, executive assistant, Burroughs Adding Co., Detroit, Mich. A. B. Dick, Jr., president, A. B. Dick Co., Chicago, Ill.

H. P. Elliott, president, Elliott Addressing Machine Co., Cambridge, Mass. Carl M. Friden, president, Friden Cal-

Machine Co., Inc., San culating Leandro, Calif.

S. McAlister, president, American Perforator Co., Chicago, Ill.

Joseph E. Rogers, president, Addressograph Multigraph Corp., Cleveland, O. Merrill B. Sands, president, Dictaphone

Corp., New York, N. Y. A. W. Vanderhoof, vice-president, Standard Duplicating Machines Corp., Ever-

ett. Mass.

Curtis G. Watkins, vice-president, Simplex Time Recorder Co., Gardner, Mass.

Thomas J. Watson, president, International Business Machines Corp., New York, N. Y.

Office Machines Dealers

H. H. Saunders, New England Adding Machine Co., Boston, Mass.

Walter Bret, International Office Appliance Co., New York, N. Y.

W. H. Wolowitz, United Typewriter and Adding Machine Co., Washington, D. C.

Paul Gross, Mailers' Service and Equipment Co., New York, N. Y.

E. R. Pfahl, Adding Machine Sales and Service, Cleveland, O.

F. Ketcherside, Buckland Van Wald, Detroit, Mich.

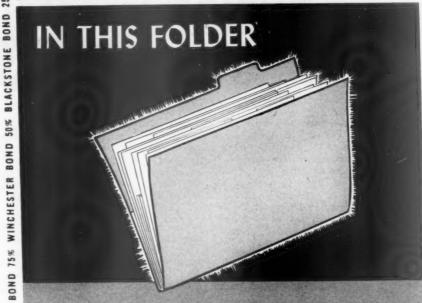
Luis de Olazarra, Shipman-Ward Manufacturing Co., Chicago, Ill.

J. A. Lyons, Reliable Typewriter and

Adding Machine Co., Chicago, Ill.
Otto E. Pruitt, Pruitt Office Machines
Co., Chicago, Ill.
Leo C. Horal, Denver Typewriter Co.,

Denver, Colo. C. P. Carter, Frank E. Wilber Co., San Francisco, Calif.

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100%



IS A TEN ACRE FACTORY

When you stop to think of the high priced talent, energy and effort that may be represented by certain of your records, accounts, documents and correspondence you will agree that they need to be placed on paper worthy of carrying heavy responsibility. WESTON papers are made specifically for this purpose, as they have been for generations.

WARSERVICES

For Papers of WESTON Quality and Stamina include map, chart, record, form, instruction book and other special service papers for army, navy, government, lend-lease and war production work.

They are time tested and proved.

Your supplier will tell you that any business record worth keeping is worth keeping on a WESTON paper.

BYRON WESTON COMPANY Makers of High Grade Papers DALTON, MASSACHUSETTS



LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX

PERSONALITIES in the NFWS

T. C. Dougan has been appointed assistant General Purchasing Agent for United Air Lines at the company's Chicago general headquarters. He succeeds James Aldrich, now on leave of absence from United as an ensign in the Navy. Mr. Dougan will be assistant to R. K. Moore, recently appointed General Purchasing Agent as successor to E. Van Vechten, (as reported in October Pur-

CHASING), who resigned to become Western representative in Los Angeles of the Weatherhead Company. Recently celebrating his 10th anniversary with United, Mr. Dougan has been with the company's purchasing department for the past five years as buyer and, since the war, as priorities specialist. His first duty with United was in the dispatch department in Chicago where he served for a year and a half. He was then transferred to the line's Cheyenne maintenance base and until his return to the Chicago office worked in the stores department there for three and a half years.

Lloyd Hedrick, manager of the Buffalo, N. Y. plant of the Ralston Purina Co., and vice president of Ralston Purina Co., Ltd., of Canada, has been elected a vice president of the company. Mr. Hedrick joined Ralston Purina in 1912 as grain buyer and General Purchasing Agent for St. Louis, and two years later was made manager of the Ralston mill at Buffalo. He received his appointment in recognition of his work in promoting the growth of the Ralston Company in the East, and responsibilities as operating advisor to the Ralston Mills at Woodstock and Montreal, Canada.

Walter Bell. Purchasing Agent for Tarrant County, Texas, and first vice president of the Purchasing Agents of Fort Worth, was especially commended by all of the District Judges in his re-appointment, according to the Southwestern Purchaser, and was the recipient of the following letter signed by them: "We heartily commend you and congratulate you, as well as each member of your personnel,

for the achievements and accomplishments that you have made in this all-important office, and this is to tender you the reappointment for the next succeeding two years, and unless we hear from you further the appointment will be made at the proper time in keeping with this letter".

Thomas J. Anderson 'has been appointed Director of Purchases, Acme Steel Company, Chicago, according to announcement by Charles S. Traer, president. Mr. Anderson has been employed with Acme Steel for over 25 years, and



was, until his new appointment, the company Purchasing Agent. He is active in the Purchasing Agents Association of Chicago, only last May having been elected president of the group. Mr. Anderson is 45 years old, married, and has three children.



Fronk W. Shymkus succeeds Mr. Anderson as Purchasing Agent. He is 35 years old. He has been associated with the Acme organization since November 1925, at which time he was employed as an office boy.

I. L. Brown, Purchasing Agent of the Seaboard Railway, Norfolk, Va., is a member of a recently created Committee of Research, Planning and Budgetary Control, announced by L. R. Powell, Jr., and Henry W. Anderson receivers of the road. L. L. Knight heads the committee whose

purpose is to deal with the development and improvement of the Seaboard and to formulate methods of effectively and economically meeting present and prospective transportation conditions.

J. G. Cabbell is Purchasing Agent, and H. H. Beavers, Assistant Purchasing Agent, heading new Purchasing Department combining the Purchasing Departments of the Southwestern Public Service Co., Amarillo, Tex., the Southwestern Public Service Co., Borger, Tex., and the Southwestern Public Service Co. of Plainview, Tex., with headquarters in Amarillo, Texas.

Wm. E. Melton has been made Purchaser for the Highway Department, and Noel P. Amstead is Purchaser and Earl Dee Ford, Assistant Purchaser for Educational Institutions, Purchasing Division, State Board of Control, Austin, Texas.

John Splain, former New York Commissioner of Motor Vehicles, has been appointed Director of Purchases for Hub Industries, Inc., producers of hydraulic aircraft equipment, Long Island City.

Mr. Splain has been actively associated with the automotive industry for 30 years. Prior to his appointment as New York Motor Vehicle Commissioner on May 11, 1942, he was Metropolitan Director of the New York State Safety Responsibility Act in the New York office of the Motor Vehicle Bureau, a position he assumed in October 1941. He had previously served



as deputy county clerk in charge of the Motor Vehicle bureau in Queens, establishing the Queens Motor Vehicle Bureau at Jamaica for the New York State Department of Taxation and Finance.

Before his activities in the Bureau of Motor Vehicles, Mr. Splain was production, publishing, advertising and business counsel for Class Journal Company publications; was for seven years general manager of R.I.V. Company, Inc., importers; was three years with the

(Continued on page 212)

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● Don't wait — start now to cut your reciprocating pump costs by installing Darcova Pumcups. Your pumps, new or old, regardless of present packing will operate with more efficiency, once this money-saving installation is made.

Time tested over a period of 35 years in the most severe pumping operations, this truly remarkable composition prod-

uct has successfully performed under the hardest and most grueling services. Darcova Pumcups offer advantages—many advantages that no other type of packing can give. Try Darcova Pumcups—keep track of the costs and judge for yourself.

TAKE ADVANTAGE OF THE FREE DARCOVA SURVEY SERVICE

Darcova field men can help you just as they are helping others, to get the most for your pumping dollar. Call them—or ask any Supply Store—or write direct.



DARLING VALVE & MANUFACTURING CO.

WILLIAMSPORT, PA.

N

(Continued from page 210)

advertising agency of Martin V. Kelly Company as account executive, production supervisor and New York copy chief; and had seven years contact in European, Canadian and Latin American purchase, sales and research.

In addition, he was for seven years business counsel for the import and export automotive industry and for general business concerns, and served for a number of years as counsel on American, European and Canadian tariffs.

George J. Cronin. State Purchasing Agent, Springfield, Mass., has been appointed to a legislative special commission

which will study methods of adjusting grievances of commonwealth employees, and maintenance of employees at State institutions, and laws, etc., applicable thereto.

Ben Newberry. Director of Purchases and Material for the Lone Star Gas Company and Lone Star Producing Co., Dallas, and president of the National Association of Purchasing Agents, is chairman of the National Firms Division of the Dallas Community Chest drive, and has appointed the following members of the Dallas Association of Purchasing Agents, as captains: Fred Bradley, George Brewer, Fred Garrett, Oscar Henen-

berg, Bart Holden, Ralph Lofland, John David, J. R. Milikan, Roy Schweiger and Robert Whitten.

F. Albert Hayes. General Purchasing Agent of the American Hide & Leather Co., Boston, is spending five days a week in Washington since his appointment as Chief, Leather Section, Leather & Shoo Branch, Textile, Clothing & Leather Division of the War Production Board. And, Stanley M. Rowland, Assistant Purchasing Agent of the American Hide & Leather Co., has been commissioned a lieutenant (J.G.) in the U. S. Naval Reserve.

Harry W. Marsh. has been appointed Purchasing Agent, Ferracute Machine Company, Bridgeton, N. J., power press and press brake manufacturers, succeeding George E. Smith. Mr. Marsh pre-



viously was Assistant Controller. He began his business career with the Finance Corporation of America in 1927, and became associated with Commercial Credit Corporation in 1934 where he was made assistant treasurer in 1937. He resigned in 1942 to become affiliated with the Ferracute Company.

J. W. Hagerty. Assistant Purchasing Agent, Pennsylvania Railroad, Chicago. has been transferred to Philadelphia, Parin the same capacity. C. J. Hoffman. Assistant Purchasing Agent, Philadelphia, succeeds Mr. Hagerty at Chicago. J. P. Sherron formerly agent in the Philadelphia office has been made Assistant Purchasing Agent. And C. L. McIlvane. Assistant Purchasing Agent at Philadelphia, recently retired after 44 years of service with the company.

Arthur E. Crandall. Assistant Manager and Purchasing Agent of Bardeen, Inc., Syracuse, N. Y., for 15 years, has resigned to become assistant buyer of the Eastern Co-operative Wholesale, New York, N. Y.

Jerome Lee Herold has been named Chief Purchasing Agent for the Emerson Radio and Phonograph Corp., New York, N. Y. He was formerly Purchasing Agent for the electronics department of the General Electric Co.

Ernest C. Gaumnits, Purchasing Agent, Winslow Marine Ry. & Shipbuilding Co., Seattle, Wash., is reported to have resigned. In the first world war period he

(Continued on page 214)



Marie drill press arm cast for a prominent machinery manufacturer.



©A small pressure casting designed for a gas engine.

Land ING manufacturers in many different fields of industry have used Forest City Castings continuously for years—many as long as 25 years.

Forest City production handles castings from a ½ ounce to a half ton—gray iron, semi-steel and high-test semi-steel. Today we can produce and deliver with unusual promptness. Discuss your requirements with one of our casting specialists. He's as near as your telephone.

Gray Iron, Semi-Steel and High Test Semi-Steel Castings PHONE PROSPECT 5040

and High Test THE FOREST CITY FOUNDRIES CO.

2500 WEST 27th ST. . CLEVELAND, OHIO

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Somebody slipped up ... back in the States

An undetected broken part...and at a crucial moment a tank, a plane, a gun goes out of action. Result: a needless tragedy . . . a tragedy born back in the States when somebody improperly packed a part for shipment.

Making precision instruments of war is just a portion of the home-front job today. There must be precision packing, too. For each and every part that is shipped must reach the fighting front undamaged.

So, in defense plants throughout the nation, KIMPAK* Creped Wadding now is widely used for packing war material of all descriptions. In KIMPAK, a million tiny air-cell "shock-absorbers" cushion the jars and jolts that often cause damage during transportation.

Parts made of plastic, glass, wood or metal... objects large or small, light or heavy, and of every conceivable size and shape now reach their destinations *safely*... thanks to KIMPAK.

Don't risk using a type of packing that may fail. Specify low-cost "shock-absorbing" KIMPAK and deliver the goods with the same painstaking care that you use in making them! Thekimpak book-

FOR VICTORY

let gives you all the facts. Mail the handy coupon for your copy . . . now.



Moisture-absorbent KIMPAK can absorb more than 16 times its weight in liquids.



KIMPAK provides shipping protection for all types of plane parts.

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PACK WITH Kim	nak CREPED	WADDING
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*KIMPAK (trade-mark) means Kimberly-Clark Wadding.

KIMBERLY-CLARK CORPORATION	P-1148
Established 1872, Creped Wadding Division	
Neenah, Wisconsin	
Send illustrated booklet that gives complete facts KIMPAK.	about
Name	
Street	
6:-	

KIMPAK IS A KIMBERLY-CLARK CORPORATION PRODUCT



BE YOUR GUIDE FOR METAL CUTTING SATISFACTION

Hundreds of shops where metal cutting is an important part of their operations have found LENOX BLADES in their Plaid Boxes the answer to their problems.

There is the right blade for every job in the complete LENOX Line.

If you have metal cutting prob-lems and have not tried LENOX we suggest that you see our Distributor in your territory.

He will serve you promptly and we know that you will okay the results.



(Continued from page 212)

was assistant to the president and Purchasing Agent of J. F. Duthie & Co., shipbuilders, and later was Purchasing Agent of the Wallace Bridge & Structural Steel Co., Seattle, one of the Duthie en-

Clifford G. Strote has been appointed Purchasing Agent, Geneva Steel Company, United States Steel Corporation subsidiary, with headquarters at Geneva, Utah. A native of Rockford, Ill., Mr. Strote had his earlier business training with the National Lock Company of that city, serving from 1930 to 1938 in various capacities, including that of Purchasing Agent. From 1938 to 1942, he was employed by Griffith Construction Co., Camp Grant, Ill., and the construction firm of Boyle & Healy, Carbondale, Ill., as Assistant Purchasing Agent. In March 1942, he became Assistant Purchasing Agent in the Defense Plant Division of Columbia Steel Co., a United States Steel subsidiary.

Sidney L. Mvers, who at one time was Purchasing Agent for the LaPlant-Choate Mfg. Co., Cedar Rapids, Ia., has been made vice president in charge of export and federal sales. He started with the company in 1923 as a helper in the factory machine shop, progressing to shipping clerk, Purchasing Agent, manager of the export and traffic department, and export manager.

Edward P. Keefe, Purchasing Agent of the Waldorf Restaurant System, Boston, Mass., was recently unanimously elected commander of Crosscup-Pishon Post, American Legion.

B. G. Sweet is treasurer and Purchasing Agent of the reorganized Combined Metals Reduction Company, Salt Lake City, Utah.

Charles H. Pae, Assistant Purchasing Agent, Standard Oil Company of Ohio, Cleveland, O., is one of five employes recently awarded company service pins. He joined Sohio 35 years ago as an office boy, became a clerk in the statistical department, and 22 years ago was transferred to the purchasing department.

Thomas I. Madigan has been made General Purchasing Agent for the Santa Fe Trail Transportation Co., with headquarters at Wichita, Kans. He previously was chief clerk of the Santa Fe Railway's department of highway motor transport at Chicago. In his new position he will be responsible for the purchasing and stores departments of the Santa Fe's bus and truck subsidiary which operates between Chicago and California points.

John S. Chase, president of the Chase Building Products Co., Dallas, Tex., and a member of the Purchasing Agents Association of Dallas, has been appointed a member of the Ready-Mixed Concrete and Concrete Products Industry Advisory Committee, by Chester Bowles of the OPA.

Dorothy M. J. Tracey, vice president of the Tompkins-Johnson Co., Jackson, Mich., has been appointed general manager, now being responsible for the man-



agerial activities formerly handled by President A. R. Johnson, thus enabling him to devote more time to the problems of manufacturing and sales. Mrs. Tracey served for a number of years as Purchasing Agent, prior to her promotion to the office of vice president in 1939.

E. Dollhopf was named manager of Purchases, Burrell Technical Supply Co., Pittsburgh, Pa., manufacturers of scientific laboratory apparatus and reagent chemicals, at a recent meeting of the board of directors. G. A. Burrell was elected president, G. H. Burrell, vice president and general manager, C. S. Steenson, secretary and treasurer, and R. M. Arnold, manager of sales.

A. L. Woods has been named Purchasing Agent, Wolverine Tube Division. Calumet & Hecla Consolidated Copper Co., Detroit 9, Mich., succeeding Robert H. Gill, who passed away October 10. Mr. Woods formerly was Assistant Purchasing Agent

Glen Horton is now assistant Purchaser for the Boyaird Supply Co., Tulsa, Okla. He previously was with the purchasing department of Cities Service Oil Co.

Charles L. Sheldon, Purchasing Agent, Hood Rubber Co., Watertown, Mass., led a discussion on packaging and the container situation, at a recent forum meeting of the Purchasing Agents Association of New York. He is chairman

(Continued on page 216)

GENERAL FACTORY SUPERINTENDENT:

A highly rated manufacturer of sheet metal prod-nots in New York metropolitan area, with guaran-eed post-war market, now wholly engaged in war work, needs a man with unusual ability who seeks ife time position with a liberal salary.

Applicant must have full knowledge of sheet metal ayouts and fabrication, stampings, welding, metal inishing and light assembly.

Reply in detail, stating qualifications and previous alary. Write Box #951, PURCHASING, 205 East 12nd Street, New York 17, N. Y.

PURCHASING AGENT:
Unusual opportunity with well established North
Jersay manufacturer of metal specialty devices whose
preduct enjoyed tremendous pre-war growth and has
a ready post-war market.
Applicant must be capable of handling personally
entire purchasing and expediting and have a thorough
knowledge of priorities. This is not just a war time
job and the man we want must be aggressive, ambitious and one primarily interested in a permanent
successful future with real opportunities.
In your reply give full particulars as to experience.
are and salary expected. Write Box #950. PURCHASING, 205 East 42nd Street, New York 17, N. Y.

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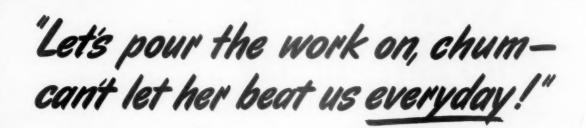
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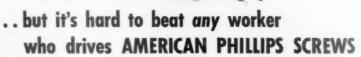
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It's a fact . . . men have no easy time keeping their production ahead of women workers who have come in . . . green . . . and been broken into screw-driving assembly work with American Phillips Screws. For with American Phillips Screws there is no longer the forbidding differential in strength and skill between men and women . . . this modern method of screw driving is a common denominator that lifts the ability of the "weaker sex" to the productive level of the "stronger sex". And here's why:

All there is to do with American Phillips Screws is: (1) insert the Phillips driver in the Phillips Recessed Screw head. (2) Aim the driver with one hand and hold the work with the other. (3) Screw is automatically driven up straight and flush... without any effort to keep it straight. There's no premium on skill and strength, as with slotted screws.

And the result: Production is increased as much as twice where American Phillips Screws are used. And there are no scarred hands, no scarred work, no broken screw heads... because the Phillips driver can't slip out.

In addition, there are other advantages to the use of American Phillips Screws which come from the name American: Full Value, guaranteed by self-checking count and individual inspection. American Engineering, that gives you expert help on special fastening problems. And American Service, that gives reasonably prompt delivery even in war time.

AMERICAN SCREW COMPANY

PROVIDENCE, RHODE ISLAND

Chicago: 589 E. Illinois Street

Detroit: 5-267 General Motors Building





l. Fost Storting—Driver point automatically centers in the recess... fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.



2. Foster Driving—Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)



3. Better Fostenings—Screws are set up uniformly tight, without burning or breaking heads. A stronger, neater job results and there are no gouges on work-surface.

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Nov

GAIN TIME hip early in day!

Mr. Brown: When'll this order reach the consignee?

Expressmon: Let's see. It's not ten yet. About five this afternoon. Same day delivery 800 miles away is easy, when you ship early by AIR EXPRESS.

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Arives AMERICAN PHILUP SCREWS

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insert the Phillips driver in the Phillips Recessed Servy shaped the principal recessed Servy shaped the principal received in the Phillips Recessed Servy and the principal received t

Y M. Air frames and with the fining of states have been gob annually reduced, in some instances as much as 121/0% depending on the weight of the shipment and the distance it moves. Consequently, shippers and indicated the shipment and the distance of 10/2% on air cargo costs.

NOTE TO SHIPPERS: Ship Farly—as soon as shipment is ready—to assure fastest delivery. Pack Compactly—to conserve valuable space.

ASK for our new 1943-44 CAL NDAR-BEOTTER. Write Dept. PR-1 Railway Express Agency, 230 P. k Avenue, New York, 17 N. Y.

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Representing the ATRLINES of the United States

(Continued from page 214)

of the National Committee on Paper Shipping Containers of the National Association of Purchasing Agents.

A. H. Dekker has been appointed Procurement Manager for Turco Products, Inc., of Los Angeles and Chicago. Mr. Dekker replaces J. C. ("Cliff") Walker, Turco's Purchasing Agent for many years



who left recently when he was commissioned as lieutenant in the U. S. Naval Reserve. Before this appointment, Mr. Dekker was Turco's specialist in the petroleum industry, where he has been well known for the last 25 years both in California and in Illinois.

John Bogart. Purchasing Agent, Board of Education, Harrison, N. Y., recently resigned. He has been with the Board since 1940.

Leo Healy has been made Assistant Purchasing Agent, Armour & Co., Fort Worth, Texas.

J. M. Pratt. Purchasing Agent, Cummer Co., Division of Sterling Drug, Inc., Bedford, Ohio, will have headquarters in Brattleboro, Vt., after December 1st, where the company is moving its manufacturing plant.

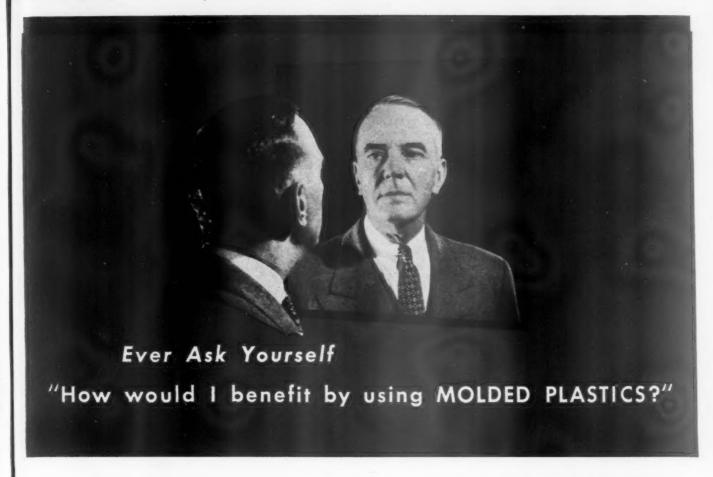
Willard V. Pape has been appointed Purchasing Agent for the city of Seattle, Wash, acceeding A. W. Akers, Jr., resigned.

treasurer of the PurAssociation of Dallas,
Mitchell recently celeMitchell recently celeach wedding anniversary.
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mong the Companies You Buy From

been made ision of the General Electric Company of the Scheme Lay, N. Y., accordent in charge of the dethis capacity Mr. Bennett Consible for the engineering, ntinued on page 218)



Maybe you wouldn't. Molded plastic parts aren't all things to all products by any means. With all their versatility there are things they cannot do as well as other materials.

But they are finding new and sometimes startling uses every day. The tonnage of plastic materials for molding has increased more than 500% in the last six years.

But probably there IS an answer to the question, for molded plastics have very clearly defined characteristics. They can be dense, hard, soft, light, tough, brittle, dull, thick, thin, transparent, opaque, translucent; they can be noninflammable, resistant to abrasion; they can have dielectric properties; they can give you all the colors of the spectrum.

It is likely that we can help answer your question. We've been turning out molded plastic parts and products by the millions of pounds and pieces, in thousands of different shapes and sizes, using dozens of different plastic materials and hundreds of presses of various kinds and sizes.

If you will tell us what you want molded plastics to do, we can probably tell you whether they are a good, bad or indifferent bet for your purpose. And we'll tell it to you STRAIGHT, too. We've no more taste for disappointments than you have.

So—if you have ever asked yourself, "How would I benefit by using molded plastics?"—we'll be glad to answer you frankly or tell you we don't know. Maybe that would help advance your postwar planning.



Molded Plastics Division • Elyria, Ohio

Chicago: Phone Central 8431 Detroit: Phone Madison 2146 Milwaukee: Phone Daly 4057
Philadelphia: Phone Camdon 2215

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O. I. Schroeder has been made vice president in charge of manufacturing, equipment and engineering, Save Electric Corp., Toledo, Ohio. Previously he was superintendent of Bloomfield, N. J. plant of Westinghouse Electric & Mfg. Co.

Marshall Haislup has been appointed to a managerial position of the E. C. Atkins & Co. Export Department, In-



dianapolis, Ind., succeeding A. J. Nugent, former manager. He is a member of the Atkins Pioneer Twenty-Year Club and for the past two years has been with the company's priority department.

J. F. Kurfees, Jr. has been elected president of the J. F. Kurfees Paint Co., Louisville, Ky., succeeding his father, J. F. Kurfees, Sr., who becomes chairman of the board.

L. O. Fryer has been made assistant secretary and assistant comptroller of Graybar Electric Co., New York. He started his Graybar career as an accountant at San Francisco in 1922; was



made service manager in 1930, and sales manager in 1937. In October 1940, he was made secretary to the General Sales Committee at Graybar headquarters in New York. In 1941 he became assistant manager at Graybar Dallas, which position he held until his recent appointment.

Goulds Pumps, Inc., Seneca Falls, N. Y. announces the appointment of Eric E. (Continued on page 220)



INTERCHANGEABILITY Speeds Maintenance

Never has proper valve maintenance been so essential as now. With the scarcity of new valves, it is all-important to take care of those you have in service. The necessity for uninterrupted operation demands no less.

With regular checking and inspection of this vital equipment and prompt servicing when necessary, valve life can be lengthened materially. It may save costly repairs later, and the possible shut-down of equipment.

The simplicity of design of Lunkenheimer "Ferrenewo" "Renewo" Valves, with interchangeable parts, makes them easy to keep in good operating condition—easy to maintain. It means speedier repairs with minimum expenditure for maintenance.

A Lunkenheimer distributor is near you to help you get what you need.



All parts of the valves above, (except bodies and bonnet rings) fit each other perfectly. If, for example, you need a stem, disc or seat ring for the "Renewo", you can use the corresponding part of the "Ferrenewo"—it is exactly the same. This means fewer parts to be carried, speedier repairs and greater ease in making them. This flexible interchangeability likewise applies between 300 lb. S.P. "Renewo" Valves.

LUNKENHEIMER VALVES

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Doris Delivers The Goods

TWENTY-YEAR old Doris Peoples is doing a man-size war job—and getting a tremendous thrill out of it. She pilots a powerful gasoline-driven lift truck through the machine-crowded shops of the big Timken Roller Bearing factory, hauling loads of from 2 to 3 tons of raw materials and finished products.

Doris averages more than 100 pick-ups and deliveries in an 8 hour shift and covers miles of shop aisles in doing so. When this photograph was taken she was handling one of the largest Timken Bearings made; it measures over 4 feet in diameter and weighs nearly 4 tons. Bearings like this are used on the roll necks of huge steel rolling mills. Timken Bearings by the millions—large and small—are going into war equipment of every kind and the machines that make it.

Despite the congested condition of the factory due to the enormous amount of bearings and other war materials being produced, Doris has never had an accident—testimony to her skill and care. She has a brother in the army—another reason why she is so interested in her job.

We can't all join the armed forces, or work in war plants like Doris; but we can all buy War Bonds—more and more of them—and thereby help to bring Victory closer.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



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Backlund as sales manager. He has been with the company since 1923. In 1932 he was made manager of the Philadelphia office, and served in that capacity until he returned to the headquarters office in 1935 as assistant sales manager.

(Continued from page 218)

Alfred M. Street has been appointed publicity manager of Jenkins Bros., manufacturers of valves, New York office, in



which capacity he will direct the advertising of all of the company's products. He has been associated with Jenkins Bros. for the past 12 years, first in Bridgeport, Conn., where the plant is located, and for the past seven years in the firm's New York offices at 80 White St. In his new position he succeeds Charles C. Chamberlain who has been made general sales manager.

Owen L. Holland has been appointed district manager, welding division, for the Chicago territory of Metal and Thermit Corp., 120 Broadway, New York. The Chicago quarters are at 7300 So. Chicago

Burrel S. Manuel, Southern California district manager of the Westinghouse Electric Supply Co. with headquarters at



Los Angeles, Calif., has been elected vice president of the Supply Co. He joined the Westinghouse company at Denver in 1918, and was promoted to the California district managership in 1938.

G. Fred Hogg has been made sales director of the Naval Stores Department of the Hercules Powder Co., Wilmington, Del. He was formerly manager of the

(Continued on page 224)



Neat clean sanitary surroundings help production, keep a finer morale in the plant and insure safety for everyone.

In hundreds of war material plants

PERMAG Cleaning Compounds

are used to clean floors of all types, marble, tile, painted or varnished surfaces

PERMAG Compounds are quick in action and are economical.

Let us send you further details on

the use of PERMAG Compounds in the maintenance of manufacturing plants.

Magnuson Products Corp.

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How to Trap Gremlins in Springs

ALL OVER BUT THE SHOOTIN'

Is Hitler washed up? We don't know. But we do know that thou sands of planes, ships, tanks and bombs are pointed his way, helped by springs. And that the design of many of these springs can be facilitated by reading "Science in Springs". Your copy is now ready for you and will be mailed im-

N a cluster of draftees, in a barrel of apples, in a clip of shells, in a batch of springs . . . in every quantity made by nature or man ... there are variations from any chosen standard. What those variations are and why they occur it is often important to know. When springs run into millions, statistical control must be exercised to bring the largest possible portion within the desired specifications. Statistical control of springs uncovers the gremlins of quality and production, detects underlying causes for variations, controls or eliminates them, anticipates changes

AT YOUR COMMAND

Write, wire

in quality. In the example below, a sample lot of springs was tested for load and length and readings noted. From the results a frequency curve of variations and a "skyscraper" chart were prepared. The height and location of the "Skyscrapers" show how many, and how much springs vary from given specifications. Statistical control is everyday work at Hunter, a matter-of-fact part of insuring the ONE right spring for your job.

Any authorized person who happens to be in our vicinity is welcome to drop in and see our system in actual operation. Hunter Pressed Steel Co., Lansdale, Pa. Wall operation. Runterr ressed Steel Co., Lansagle, rd.

"Guide for Quality Control" (Z1.1-1941) and "Control Chart
Method of Analyzing Data" (Z1.2-1941) Printed together in one
Method of Analyzing Chart Method of Controlling Quality Duramphlet and "Control Chart Method of Pamphlet is 75 cents.

In a production of the control of the c

REPRINTED BY REQUEST—In response to many inquiries from the first printing of this advertisement, we wish to advise that our statistical control system. we wish to davise mai our statistical control system is based on the American War Standards for Quality Control. These may be obtained from the American Standards Assn., 29 W. 39th St., New York 18, N.Y. RMS +ZW

HUNTER PRESSED STEEL COMPANY, LANSDALE, PENNA.

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CLARK TRUCTRACTOR

BATTLE CREEK, MICHIGAN, U.S.A.

1M= 1550N in Aluminum Castings

According to WPB figures, the average American-built war plane contains seven and According to WPB figures, the average American-built war plane contains seven and one-half tons of aluminum; some of the larger hombers carry more than double that one-nan tons of aluminum; some of the larger bombers carry more than double that weight of aluminum parts. Aluminum castings are an important part of this tonnage. weight of aluminum parts. Aluminum casings are an important part of this tonnage. It has been our privilege to produce a part of this tremendous volume of aluminum castings for planes and other armaments. Some of these castings as far beyond present It has been our privilege to produce a part of this fremendous volume of aluminum castings for planes and other armaments. Some of these castings go far beyond pre-war limits along the casting of the c ings for planes and other armaments. Some of these castings go far beyond pre-war limitations in size — others are of extremely intricate shape and coring. Plane and engine builders have learned that there is no aluminum casting job too large, too small or too complex for Howard Foundry. Deliveries are made on schedule—or sooner.

Current accomplishments in aluminum castings indicate more extensive peace-time. or too complex for noward Foundry. Denveries are made on schedule—or sooner.

Current accomplishments in aluminum castings indicate more extensive peace-time applications. In aircraft this is definitely assured. To mention another field—trucks and applications. In aircraft this is definitely assured by the breader use of aluminum bases—weight sovings of great value will be seemed by the breader use of aluminum applications. In aircraft this is definitely assured. To mention another nein—trucks and buses—weight savings of great value will be secured by the broader use of aluminum buses—weight savings of great value and we have to figure propinently in these revolubuses—weight savings of great value will be secured by the broader use of aluminum cast parts in the designs of tomorrow and we hope to figure prominently in these revonutionary improvements, which will embrace a wide range of products.

The three Howard foundries—aluminum, magnesium, bronze—embody the largest cast parts in the designs of tomorrow and we hope to figure products.

In the designs of tomorrow and we hope to figure products. jobbing production of nonferrous castings in America; all

of which is now being poured for the war effort.

When you need nonferrous castings, check
with Howard first

with Howard first. For armament today—for utility

tomorrow. HOWARD FOUNDRY COMPANY 1900 Bloomingdale Rd., Chicago



BRASS . BRONZE MAGNESIUM

Nov

PURCHA

(Continued from page 220)

Naval Stores department office in Chicago, and during the past year has been at the company's industrial explosives plant in Hercules, Calif.

Joseph W. Frazer, president and general manager of the Willys-Overland Motors, Toledo, O., recently announced his resignation.

Frank A. Ruldolf has been made eastern sales manager, Aircraft Accessories Corp., Kansas City, Kans., in charge of sales in the Dayton, O., and Washington, D. C. offices. He has been head of the

corporation's New York office in Rockefeller Center and will maintain his offices there.

R. S. Arnold has been made assistant to M. R. Minnich, sales manager of the American Welding & Mfg. Co., Warren, Ohio. He was formerly manager of the Ideal Foundry Divn., of the Republic Steel Corp., Newton Falls, Ohio.

R. W. Morrison, manager of the Industrial Pneumatic Tool Divn. of the Aro Equipment Corp., Byran, Ohio, has been appointed a member of the WPB Portable Pneumatic Tool Industry Advisory Committee.

& Insulation Materials Division of the General Electric Co., New York, has been transferred to the Schenectady, N. Y. office of the company. All matters pertaining to sales and order service should be directed to Mr. Mead's new office.

Gwilym A. Price. Pittsburgh, Pa., has been made a vice president of the Westinghouse Electric & Mfg. Co. He was



formerly president of the Peoples-Pittsburgh Trust Co. At Westinghouse, his responsibilities will include settlement of war contracts.

George A. Meyer has been appointed general sales manager of Advance Pressure Castings, Inc., whose sales, engineering, Purchasing Departments, and technical laboratories are now located at 894 Manhattan Avenue, Brooklyn 22, New York. The plant address is 34-48 No. 15th St., Brooklyn 22, N. Y.

Lowell E. White, formerly test pilot for the Wright Aeronautical Corp., has joined the research engineering staff of



the C-O-Two Fire Equipment Co., Newark, N. J. Mr. White has flown in excess of 5500 hours in about 200 different types of planes.

Elastic Stop Nut Corp of America. plants at Union and Hillside, N. J., and Lincoln, Nebr., announces the adoption of a liberal retirement plan providing automatic pensions at the age of 65 for the company's 5,000 employees, with all costs borne by the firm. After five years of service, employees may become contributing members, the voluntary contributions being used to increase the amount of pension

(Continued on page 228)



● You save considerable time when making replacement bearings . . . if you use Johnson UNIVERSAL Bar Bronze. Complete machining I. D.— O. D. and ENDS shows that every bar is entirely usable from end to end . . . no waste or scrap. Complete machining also saves up to 25% in weight. 350 sizes...cored and solid...enables you to buy according to needs. Remarkably good service is available through Johnson Distributors located in every principal industrial city. The next time you buy bar bronze specify . . . Johnson UNIVERSAL. Write for stock list.





When the Scene Shifts...

No job of industry is so important as building sufficient weapons to win the War. That comes first. But when the scene shifts . . . when men at the front think of peacetime pursuits again ... they have the right to expect that jobsgood jobs—are awaiting their return. The planning for these jobs must be done before the War ends. Here, at Guardian, while every production hour is devoted to War, we are also planning for Peace. If your post-war products include the use of relays we shall be glad to discuss plans with you so that your

boys—and our boys— who are now in service, may quickly resume their peacetime pursuits. GUARDIAN ELECTRIC Series 40

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FOR WAR-FOR PEACE- Kelays BY GUARDIAN

PRECISION WATCHMAKER ELIMINATES GLARE WITH BLUE RIDGE FROSTED AKLO GLASS

Internationally Known Product Is Built with Help of Natural Daylight





REDUCES GLARE — Eliminates eyestrain and employee fatigue.



RETARDS SUN HEAT—Keeps werkers comfortable on their jobs.







RENDERS SAVINGS—Eliminates shades or painting of glass.

Delicate mechanisms, so finely balanced and constructed that, for years, they have been standards of precision craftsmanship for railroad use, are machined in a Midwestern plant to extremely minute tolerances under natural daylight, softened by Blue Ridge Frosted Aklo Glass.

The photo above shows one of the innumerable examples of the way in which Frosted Aklo provides nonglaring daylight for a multitude of precision operations.

In any plant or office where Seeing is important, Frosted Aklo is a distinct contribution to increased production, reduced employee fatigue and better work. Frosted Aklo softly diffuses incoming natural daylight—reducing eyestrain. Absorbing approximately $97\frac{1}{2}\%$ of the sun's infrared rays—it increases working comfort. In air-conditioned areas, it contributes to lowered operating costs...and it eliminates costly painting of windows or the use of window shades.

Made by the Blue Ridge Glass Corporation of Kingsport, Tenn., Frosted Aklo is sold by Libbey Owens Ford through leading glass distributors. It is available in hammered and ribbed patterns, both wired and unwired. Ask your glass distributor, or write Blue Ridge Sales Division, Libbey Owens Ford Glass Company, 5113 Nicholas Building, Toledo 3, Ohio.

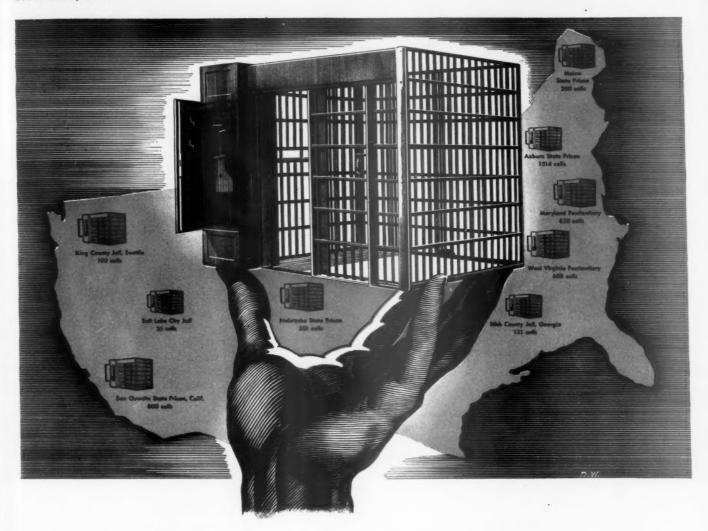


BLUE RIDGE AKLO GLASS

Heat-Absorbing · Glare-Reducing · Figured and Wire Glass



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HERE'S Greater Endurance FOR YOUR POSTWAR PRODUCTS

The largest jail builders in America can help you plan and produce higher quality postwar products

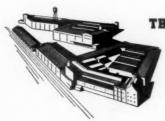
• You never expected to find a solution to one of your postwar problems in a jail cell, did you? But there's one here for you if you are looking for new ways of building endurance into your products of the future.

Van Dorn has been building jail cells since 1878. Today, they're found in leading prisons from Sing Sing to San Quentin and from Winnipeg to Cristobal.

Our engineers pioneered in the use of tool-resisting steel for jails and have since developed many of the most impregnable metal designs ever produced. Our interlocked and counterlocked cell construction is recognized as providing maximum strength and rigidity. The Fully Selective Keyless Locking Device which is the standard of efficiency and safety for remote control of sliding cell doors is a Van Dorn development.

Jail cell construction is only one phase of Van Dorn production. Today, we are 100% engaged in building armor plate for planes, tanks and guns. But our 65 years of metal working experience and our vast heat treating, welding and fabricating equipment have been highly successful in the production of an immense range of metal products for manufacturers everywhere.

Perhaps our design, engineering and manufacturing facilities can assist you in preparing for peacetimes—by developing better product designs and construction that can be produced faster and at lower cost.



VAN DORN

IRON WORKS COMPANY . CLEVELAND 4, O.

PECIALISTS IN METAL FABRICATION AND HEAT TREATMENT SINCE 1878



PROTECTION ...

... Destroyers for Convoys

... GENERAL HEAVY-DUTY BOXES



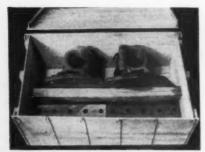


WARTIME overseas shipping and packing conditions demand a container with stamina . . . a container that can meet the day-by-day hazards of rough sea voyages, rapid loading and unloading, careless handling. General HEAVY-DUTY Wirebound Containers are designed to stand up under these tough conditions.

Made of a much heavier material than domestic wirebound containers, these wire-stitched heavy-duty boxes provide

maximum protection for export shipments. And they are lighter, cost less and occupy less space than the conventional type of export box. Packing and unpacking are quick and easy.

The HEAVY-DUTY Wirebound is a "war baby" that has already won its spurs in protecting and facilitating war shipments. Tomorrow, it will be giving its advantages, tested in the hard school of war, to countless peacetime products.



All types of war products are bandled easily and quickly in these HEAVY-DUTY export boxes. They're designed to the product.



These export boxes assure protection against crushing and distortion. And their durability makes them available for re-use.



GENERAL OFFICES: 48 West Illinois Street, Chicago, Illinois

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon; Continental Box Company, Inc.: Houston, Dallas.

(Continued from page 224)

and provide disability pensions and severance benefits. In example, a single man of 35 who averages \$2500 a year until the age of 65 will receive a monthly pension, without any investment on his part, of \$41.

Miller G. Robinson has been appointed manager of Engineering Service of the



Paint Division of Aluminum Industries, Inc., Cincinnati, Ohio.

Albert J. Bradley has been made general sales manager of Prack Laboratories, Inc., New York, N. Y., manufacturers of industrial skin protective creams and similar products.

Ault & Wiborg Corporation, a subsidiary of Interchemical Corporation, is now the Ault & Wiborg Division of Interchemical Corporation.. There is no change in management or personnel.

Arthur A. Brandt has been made general sales manager, Electronics Department, General Electric Co., Schenectady,



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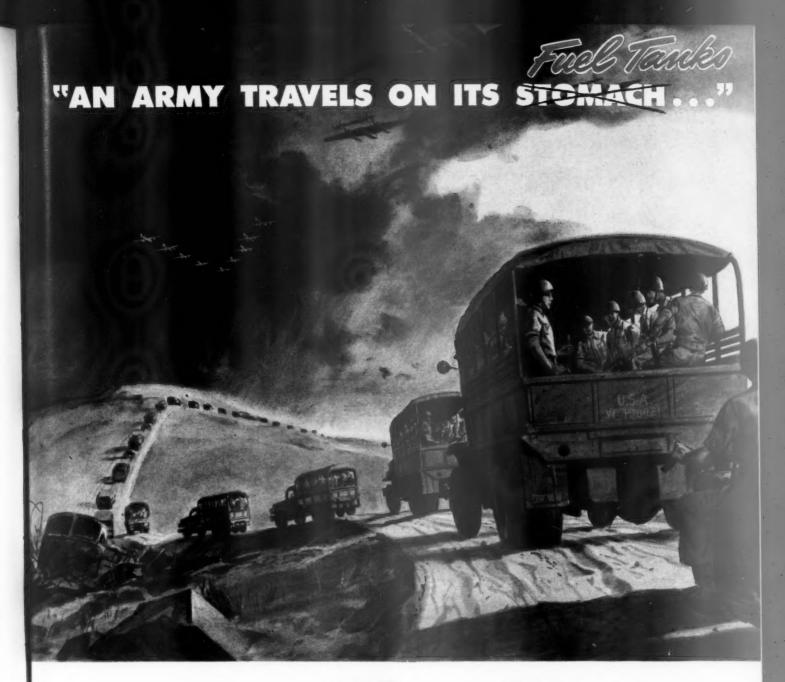
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N. Y. He was formerly sales manager of the receiver division. In his new capacity he will be responsible for the coordination of the sales plans and policies of the several divisions and the operations of the Electronics Department district offices.

Dunbar Engineering Co.. 103 Park Ave., New York, N. Y. has been appointed sales representative for the State of Connecticut by the Edward Valve & Mfg. Co., Inc., East Chicago, Ind., and W. E. Bowler, Philadelphia, has been made sales representative for the Reading, Pa. territory.

(Continued on page 231)



OIL is our "Secret Meapon"

Not the roaring mistress of the sky with its uncanny bombsight . . . not the incredible jeep . . . not the tank-blasting "bazooka" . . . not even the shining courage of our fighting forces. These are known.

But what of OIL?

& nd

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Without oil AMERICA'S VICTORY MARCH STOPS DEAD IN ITS TRACKS. Next week, or tomorrow, or today . . . we stop moving when oil stops flowing.

Behold, then, the spectacle of our most potent weapon veiled in relative secrecy, through general lassitude or just plain misunderstanding of its vital, basic, tremendous importance!

If this were not so there would be no threat of an oil shortage caused by lack of equipment, tools, pipe, or manpower. There would be no failure, occasioned by inadequate price incentives, to develop new oil reserves to replace fast dwindling known ones. There would be no quibbling delay when the stake is human lives.

Get this straight America! Our armed forces cannot travel on empty fuel tanks. Oil, our mightiest weapon, must not be a secret one any longer.

Nothing must stand in the way of an enlightened policy of maximum production with equivalent or better reserve replacement. Adjustment of all factors necessary to achieve this end is the urgent need of the oil producing industry... and the nation.





...and Mobility
depends on OIL



PITTSBURGH STEEL COMPANY

Grant Building (P) Pittsburgh, Pa.

SERVING THE PRODUCING AND REFINING INDUSTRIES WITH DRILL PIPE, CASING, OIL WELL TUBING, REFINERY PIPING

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All of this Lyon Shop Equipment Is Available for War Plants



All of this Lyon Shop Equipment Is Available for War Plants



LYON BENCH LEGS -No. 2401-11. 28" x 32-1/4". \$2.95.



LYON BAR RACKS-No. 28-36 first section and No. 28-236 second section. Each section 36"wide, 31-1/2" deep, 79-5/16" high. As illustrated, \$58.25.



LYON WORK BENCH — No. 5100. With Half Depth Shelf, Back Stop and Two End Stops 60"long, 28"deep, \$17.75. Drawer 12"wide, 16"deep, 4" high, \$2.95 extra.



LYON PORTABLE TOOL STAND - No. 2970-22. With Top, Two Shelves, Casters and 480-14 Drawer. 24" x 24" x 37-1/8." \$12.00.



LYON TOOL TOTER-No. 2983-11. With Top, One Shelf, Casters and Two Drawers. 18" x 24" x 34-1/2". Drawers 15" 23-1/2" x 4-5/8". 1/2" x 4-5/8". \$11.30.



LYON TOOL CABINET-No. 2144-11. With padlock attachment (lock not furnished) 21-1/4" x 15-1/4" x 34". \$12.00.



LYON SLOPING FRONT TOOL STORAGE UNIT-No. 10-1. Has 88 openings on 8 shelves. 34-1/2" wide, 17-1/2" deep, 37-5/8" high overall. \$24.25.



LYON "L" MATERIALS HANDLING CONTAINER -No. 410F16. 11" x 22" x 6"-16 gauge steel, \$0.95.



LYON "H" MATERIALS HANDLING CONTAINER -No. 421F14. 12" x 18" x 6"-18 gauge steel, \$1.60.



LYON "O" MATERIALS HANDLING CONTAINER -No. 425F11. 11-13/16" x 22" x 7-5/8" — 18 gauge steel, (with runners) \$1.75.



Branches and Distributors in All Principal Cities

EXPOSE YOUR LYON CATALOGS AND YOU'LL GET ORDERS

(Continued from page 228)

Alfred C. Sanger has been appointed sales manager for the appliance divisions of General Electric Company's appliance and merchandise department. In peacetime the appliance divisions include refrigerators, ranges, water heaters, electric sinks and kitchen cabinets, home laundry equipment, heating devices, clocks, fans, sunlamps and electric blankets. Mr. Sanger previously was manager of General Electric's traffic appliance divisions. Sales activities of that division are now in charge of Marshall B. Ross.

Glen Gronberg has been appointed Western Sales manager of the Washburn



Co., Worcester, Mass., with headquarters at Rockford, Ill. He succeeds A. F. West, resigned.

Monning, Maxwell & Moore, Inc., with plants at Bridgeport, Boston, and Muskegon, have opened a new plant in Tulsa, Okla., for the manufacture of oil relief valves. G. P. Kirchhofer is plant manager. The company's district sales office under the direction of Manager Malcolm Black will continue at 317 East 4th St., Tulsa.

Skilsaw, Inc., Chicago, announces the appointment of J. J. Topolinski as works manager, succeeding L. E. Parker, vice



TOOL

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on 8 wide, 5/8"

5.

president, who has resigned because of family illness. Mr. Topolinski has been associated with Skilsaw eleven years.

Kennametal, Inc., Latrobe, Pa., is opening a Philadelphia office and warehouse at 3701 North Broad St., in charge of Wm. S. Jones.

(Continued on page 234)



When you need these "BRUTE" size

Large Diameter Cap and Set Screws . check with Cleveland

Verifying Cleveland's claim to a complete line of Cap and Set Screws, these larger than usual sizes are available in diameters 1% to 1%, lengths 2'' to 10'' inclusive. Special lengths to order. Made to close tolerances, full machine finish. Write for prices and delivery estimates.

THE CLEVET AND CAP SCREW COMPANY . 2917 E. 79th St., Cleveland 4, Ohio

Cleveland Cap Sci

Set Screws and Special Upset Parts

Made by the Originators of the Kaufman Process for Greater Strength and Accuracy Specialists for 26 years in Headed and Threaded Products

POPiar 7530 BArclay 7-5088 PHILADELPHIA: 12th & Olive Sts. . POPlar

NEW YORK: 47 Murray St. . . . LOS ANGELES: 1015 E. 16th St.



FLEETING GLANCE in retrospect is a convincing revelation of how far we have come along the pathway of science and invention in a half century. It is also a promise and a prediction of what goals may be reached in the years ahead.

The AUTOMATIC RECORD CHANGER—today a specified unit of modern phonographs—is a striking example of this progress. Prior to Pearl Harbor G. I. Record Changers had won distinct recognition for their long-term, service-free dependability, their permanence of factory adjustment and ease of installation. But our record changers of the future will definitely surpass those of yesterday, for normal advancement has been accelerated by the improved designing and production skill demanded by the present great emergency.

While we cannot plan all the details now, we can lay the foundation for the new devices and products which are the harvest of wartime ingenuity. Our thinking—our designing and potential production facilities can be of value to you if you include them in your own post-war plans. We would be happy at the opportunity to call and sit down with you to discuss it.





With full WPB approval, we stopped making all large size grinding wheels and fixed our sights on wheels 3" in diameter and under.

quantities and rush orders—shipping them promptly—This is our job,

We worked all around the clock, 24 hours a day, and in a short time were able to fill orders on time—And, our central location cuts time in transit. Today, there is no waiting. With the Army-Navy E at our masthead, we are going full speed ahead.

TEST WHEEL FREE—To get acquainted with Chicago Wheels, let us send one postpaid. Tell us size wheel and material you wish to grind.

Write for illustrated catalog



Half a century of specialization has established our reputation as the Small Wheel People of the Abrasive Industry. You can bank on us.

our battlefield.

CHICAGO WHEEL & MFG. CO.

118 S. Aberdeen St., Chicago 7, Illinois



Send Catalog. Interested in:			118-11
Mounted Wheels		☐ Grinding	Wheels
☐ Send Test W	Vheel. Size	*****	
Name		*******	
Address		* * * * * * * * * * * * * * * * * * * *	*****

MERIT AWARDS ARMY—NAVY—MARINE

Continental Rubber Works. Erie, Pa., has received the White Star award denoting the maintenance of the high manufacturing standards which brought them the Army-Navy "E" flag. Continental has been producing essential rubber components for the Chemical Warfare Department, as well as other war products for the Army, Navy and Air forces. The White Star citation was received at the time the company was observing its 40th anniversary.

General Electric Co., Bridgeport, Plant. White Star for Army-Navy flag.

Solar Manufacturing Corp., 285 Madison Ave., New York; plants at Bayonne and West New York, N. J. White Star for "E" flag. The Solar Company has been recognized as a pioneer in the use of blind employees for precision work in assembling capacitors used in electronic appliances.

Edwards & Co., Norwalk, Conn. New Army-Navy pennant with star. Also gold star to be added to Maritime "M" pennant.

Warren Webster & Co., Camden, N. J. White Star for Army-Navy pennant.

Hercules Powder Co. 1800 men and women of home offices and Experiment station are now entitled to wear the Army-Navy "E" pin for their share in the war effort. Under the rules of the War Department, employees of the central office of a corporation are given "E" pins after a majority of the employees of the corporation has received the award. Hercules has raised the Army-Navy "E" flags at its Radford Ordnance Works, and at its Kenvil, N. J., Parlin, N. J., Hopewell, Va., Port Ewen, N. Y., Belvidere, N. J., and Hercules, Calif. plants.

Jenkins Bros., Bridgeport, Conn., valve manufacturers. Extra star for "M" pennant. The blue pennant with its white



Jenkins Bros. Add Star to "M" Flag

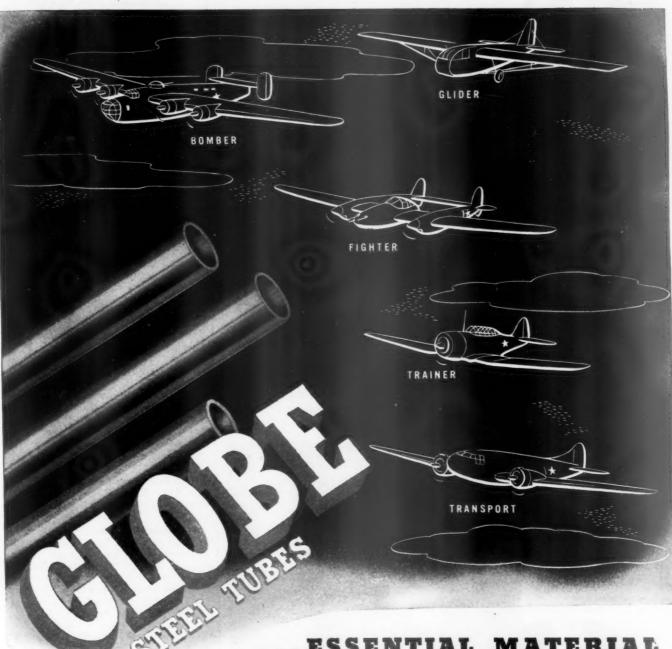
"M" and single gold star was first presented to the men and women of Jenkins Bros. six months ago. Besides possessing (Continued on page 236) 1-1-

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...ESSENTIAL MATERIAL IN THE CONSTRUCTION OF MODERN AIRCRAFT

MORE than 83 different parts used in modern aircraft construction involve the use of Globe Steel Tubes — including Globe seamless carbon, alloy and stainless steel tubes, as well as Gloweld welded stainless steel tubing.

Great structural strength with minimum weight—adaptability and easy machine-ability—uniformity—qualify Globe steel tubes for applications ranging from small stator shells in fractional horsepower motors, as used aboard planes, to sturdy cylinders required for hydraulic landing gear.

Bailer & Pressure Tubes
 Candenser & Heat
 Exchanger Tubes
 Mechanical Tubing
 Stainless Tubes
 (Seamless)
 Candenser Tubes
 (Seamless)

GLOBE STEEL TUBES CO. MILWAUKEE, U. S. A.

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WOMEN WORKERS AND ALL GREEN HANDS

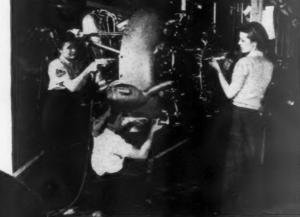
can drive

HOLTITE
— PHILLIPS—
SCREWS and BOLTS

The illustration below shows a specific instance of the proficiency in power driving that can be attained by women workers. At the Consolidated Vultee Aircraft Corporation in some departments power tools replace hand-driven screw drivers and wrenches commonly use when men were employed.

when men were employed. This production - boosting operation has been made possible by the adoption of recessed head screws. By this modern fastening practice, experienced workers can cut fastening time up to 50% and more.

with speed, safety and efficiency! Basic training time for inexperienced workers is cut to a minimum and production increased without hazards of injuries, spoiled work or burred heads.



When Speed Nuts are used with HOLTITE Sheet
Metal Screws in place of machine screws, another
saving in production time is effected, as the small
tapered point permits a quicker start when nuts are
run on. The smooth threads with faster lead reduce
turning time and provide a tighter lock to defy vibration.

HOLTITE "Thread-Forming" Sheet Metal Screws eliminate tapping operations by cutting their own threads in the material as they are driven in. For all metal-to-metal fastenings, specify HOLTITE Type "A," "Z" or "C" sheet metal screws.

CONTINENTAL
SCREW CO. New Bedford, Mass., U.S.A.
SCREW CO. BUY MORE WAR BONDS

(Continued from page 234) the Maritime "M", with its new star, the company also flies the Army-Navy "E" pennant which carries two stars.

Buffalo Pumps. Inc. Buffalo, N. Y. Pennant with two stars affixed, marking a second renewal of the "E" award.

M. W. Kellogg Co., Jersey City plant. Gold Star for Maritime pennant.

Briggs Clarifier Co., Washington, D. C. Army-Navy "E" award.

The Ferro Machine & Foundry Co., Cleveland, Ohio. Army-Navy "E" award.

Cutler-Hammer Inc., Milwaukee, Wis. White Star for Army-Navy "E" flag.

Jones & Laughlin Steel Corp.. Pittsburgh Works. Maritime "M". Award made by Charles E. Walsh, Director of Procurement of the United States Maritime Commission. Mr. Walsh was Purchasing Agent for the Bethlehem Steel Plant at Sparrow's Point, Md., when he joined the Commission in 1941 as Chief of the Procurement Section of the Construction. In 1943 he was appointed to his present position and has full charge of all inventory, warehousing, sales and purchasing functions in the gigantic merchant shipbuilding program.

Carboloy Co., Inc., Detroit. Army-Navy "E" burgee.

Nash-Kelvinator Corp., Propeller Division. Army-Navy "E" award at plants in Grand Rapids and Lansing, Mich.

Are Equipment Corp., Bryan, Ohio. White Star for its Army-Navy "E" flag. The company's Cleveland plant recently received the A-N "E" pennant also.

Wagner Electric Corporation. St. Louis, Mo. White Star renewal for Army-Navy Production Award flag.

Chicago Wheel & Mfg. Co., Chicago, Ill., Army-Navy "E" award.

DEFLOCCULATOR AIDS PAINT RECOVERY

A new and important use in the War Production Board's paint recovery program was discovered recently for a chemical compound known as Turco Deflocculator, according to Turco Products, Inc., of Los Angeles and Chicago.

Paint overspray collected from water wash curtain spray booths which used circulating water treated with Turco Deflocculator lent themselves better to recovery and produced a recovered paint of the highest quality, according to test runs recently made at the Southern California area reclamation factory.

When Turco Deflocculator was originally designed as a chemical treatment for circulating water systems in paint spray booths, its sole purpose was to

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PLASTICIAN

Perhaps molded laminated plastics is the answer to your problem. Cold molded plastics may be the best bet. Are you pondering between a choice of compression molded urea and injection molded methacrylate? The Plastics Divisions of the General Electric Company manufactures compression, injection, transfer and cold molded plastics. They also mold and fabricate parts of laminated sheets, tubes and rods; and since the beginning of war, G-E has been low pressure molding large structural pieces. Because General Electric manufactures plastics by all these methods, you can be sure your application is made the proper way from the proper material.

G-E engineers and designers are your engineers and designers. These plasticians will tell you if a combination of metals and plastics is the answer to your problem. They will frankly tell you if the colorful ureas, the sleek phenolics and the versatile thermoplastics, or the heat resisting cold molded plastics are not for you. Let these plasticians help you, write Section C-10, One Plastics Avenue, Pittsfield, Mass.

192,000 employees of the General Electric Company are on their jobs producing more goods and buying over a million dollars of War Bonds every week to hasten victory.

Listen to the news on the WORLD TODAY each week-day evening, CBS, 6:45 P.M., E.W.T. On Sunday, listen to the HOUR OF CHARM on NBC, 10:00 P.M., E.W.T.

PLASTICS DIVISIONS

GENERAL SELECTRIC

*
One Who KNOWS Plastics

No

These Double-Wall Crane Wheels Lasted 20 Years in Heavy Duty

crane wheels of our customin R-342, replaced identical Amsco - made wheels which had run for 20 years on a car builder's foundry cranes.

The customer wrote:

"We believe that 20 years' performance under our hard usage is unusual even for manganese steel wheels. At any rate we are not likely to buy any other kind for such service if for no other reason than that it would take just too long for a possible superiority to be demonstrated."

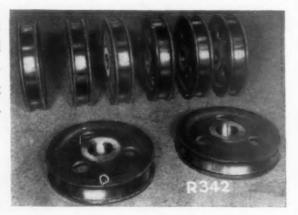
Any sound, well-designed, properly heat - treated crane

wheel made of austenitic manganese steel will usually give good service. But singlewall wheels have at times shown a tend-

The 18-inch manganese steel ency to crack in the web at flanges or hub; and to overer's double-wall design, shown come this possibility the Amsco double-wall design (see A-282 and our sketches) was developed.

> The flanges in this type are continuous with the walls, giving high resistance to side thrusts; and the walls are internally connected by cross members, which afford a strong support for tread and flanges. The work-hardening property of "the toughest steel known" assures a long-wearing tread.

> A convenient means of obtaining prices is our crane wheel questionnaire form, sent on request.

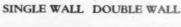




R-342 Manganese steel wheels like these lasted 20

A-282 and sketches show the Amsco double - wall construction.









POUNDRIES AT CHICAGO HEIGHTS, ILL; NEW CASTLE, DEL; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.

emulsifying oil and resinous vehicles and dispersing pigments so that they could not deposit on the metal walls of the spray

(Continued from page 236) prevent breaks in the water curtain by

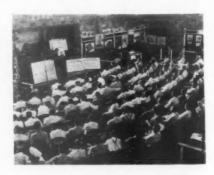
Now, without changing the method or directions for using the compound, Turco Deflocculator serves a double duty. At the same time that the dilute solution of the compound (an initial charge of 1/3 ounce to the gallon of water, with further additions of 1/6 ounce per gallon every four hours) is acting to prevent breaks in the water curtain and maintaining an unbroken sheet, it also serves as a chemical recovery agent. By preventing the formation of scum on the top of tanks, Turco Deflocculator aids in producing a higher quality of sludge which stays smoother and is dispersed easier after reclaiming.

> 1 1 1 FELT SAMPLE CARD

For the assistance of designers, engineers and Purchasing Agents interested in the possibilities of using felt as an alternate for critical materials, the American Felt Co., Glenville, Conn., has issued a convenient Aerofelt sample card containing actual samples of the 16 standard grades of Aerofelt. The Aerofelt line comprised S.A.E. felts coated with rubberized compounds, synthetic rubbers, resins, asphaltums, etc. Strips, washers, grommets and intricate parts, cut to specification, are being used as alternates for parts formerly made of rubber and other critical materials.

EXHIBIT 22 NEW PRODUCTS

Twenty-two new Doall products were demonstrated to representatives at a Products Exposition and Service Clinic recently held at Des Plaines, Ill. The clinic was sponsored by Continental Machines, Inc., and its six associate companies-The Doall Co., Savage Tool Co.,



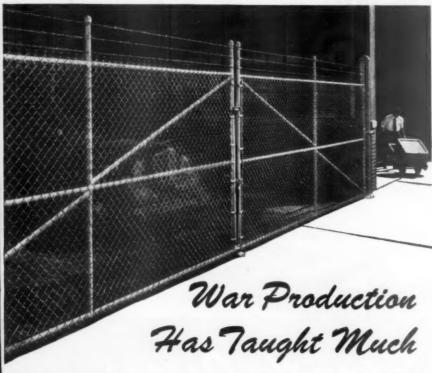
At Doall Products Exhibition and Service Clinic

Contour Saws, Inc., File Bands, Inc., Alloy Metals Divn., and the Speedmaster Co. All of the new products exhibited at the convention were the outgrowth of the principles of contour sawing and filing embodied in the Doall machine. The new products include a type of high speed sawing machine, saw bands, hack saws, automatic butt welders, precision gage blocks and instruments, precision grinders, selectrons, chucks, grinding wheels, abrasive (Continued on page 240)



DAGE FENCE

America's First Wire Fence - Since 1883



Out of wartime production experience come many valuable lessons. One of the more important is the universal need for reliable fence protection. Industries, service companies and other enterprises need this safeguard against careless and malicious trespassers. If your property does not have Page Fence protection, plan now for its erection when material is available. It's sturdy and long lasting. Send for copy of FENCE FACTS and name of Association member nearest you. Consult this expert on any fence subject — new fence or servicing existing fence. Address PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pa.

PRODUCT OF PAGE STEEL & WIRE DIVISION -- AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN



Welded Stainless Tubing

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14¾" O.D., and in wall thicknesses ranging from $\frac{7}{64}$ " to $\frac{1}{2}$ ". Write for data sheet.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.

(Continued from page 238)

bands, a continuous band filing machine, a line of perishable tools and various soluble and cutting oils and saw lubricants—all designed to offer industry more efficient operation in peace time production.

The exposition, while marking the 8th anniversary of the Continental group, was also the occasion for dedicating a new plant for the Doall Company at Des Plaines.

OPEN FOURTH PLANT FOR DRY PAINT MANUFACTURE

Opening of a fourth plant for the manufacture of "Dehydray", a completely dry paint, is announced by the Devoe & Raynolds Company, Inc. Dehydray comes in cardboard cartons and is mixed with water. It is available in 12 standard colors.

VAN NORMAN CHANGES FORM OF COMPANY NAME

At a special meeting of the stockholders of the Van Norman Machine Tool Co. held in Springfield, Mass., the form of the company's name was changed to: "Van Norman Company". In past years the company's activities have been expanded to include production on an increasing scale, of automotive service equipment, and more recently products associated with the field of electronics, notably induction heating equipment. The purpose of the change is to abbreviate the present corporate name and to eliminate the implication that the activities of the company are or will be confined solely to the production of machine tools.

NEW VALVE PLANT NOW IN PRODUCTION

The new cast steel valve plant of the Ohio Injector Co., Wadsworth, Ohio, is reported to be in full production. The plant contains a quarter million square feet of floor space. The new executive office building at Wadsworth, also recently completed, flies the Army-Navy "E" flag.

DIAL INDICATOR HOLE GAGE INSTRUCTION BOOK

An instruction booklet on the setting and using of Federal Model 1201 series Dial Indicator Hole Gages, is available from the Federal Products Corp., 1144 Eddy St., Providence, R. I. The booklet one of a series of instruction booklets covering various instruments made by the company, goes into detail on the handling reading and setting the gage. The company states that the book is of interest only to those who use the gage in their shop.

GENERAL ELECTRIC CHANGES

Formation of an Oakland, Calif. Works Section of General Electric's Wire and Cable Division, and the appointment of B. F. Ilsley as assistant manager of sales with responsibility over commercial oper-

(Continued on page 244)

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An Important Fact* to Remember ··· When You Plan for Post-War





Dependability has been a characteristic of Emerson-Electric products for 53 years. This precision-manufacturing skill and experience is now devoted 100% to the war effort; building poweroperated revolving gun turrets, electric aircraft motors, shell parts -also electric fans, motors and welders authorized by priorities.

THE EMERSON ELECTRIC MFG. CO. SAINT LOUIS ... Branches: New York Detroit · Chicago · Los Angeles · Davenport



Exhau them able, more toda eve

FMERSON-ELECTRIC POWER DUTY EXHAUST FANS, DIRECT AND BELT-DRIVEN TYPES

EMERSON Reproduction of an Emerson-Electric ad of a former year.



EMERSON-ELECTRIC EXHAUST FANS IN SERVICE



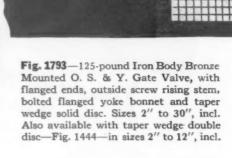
MOTORS - FANS - APPLIANCES - A.C. ARC WELDER

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Every time you hear or read of the industrial miracles that are being performed today . . . remember that wherever there is production there are valves and that, next to the men, the most important links in the chain of victory are the valves that control the liquids and gases that are the lifeblood of industry.

POWELL devotes to the manufacture of valves . . . and valves only . . . the skills developed through nearly a century of specialized valve manufacture. Furthermore Powell Engineers are always ready and eager to help you solve any valve control problems

which may arise.

The Wm. Powell Co.

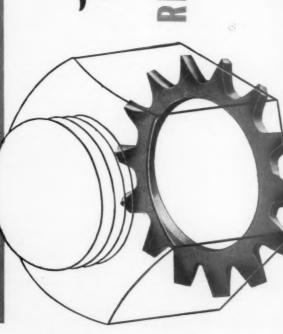
Dependable Valves Since 1846

Cincinnati, Ohio

POWELL VALVES

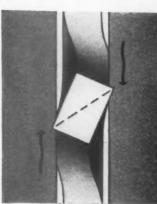
IN THE CHAIN OF

HKEPHUUF LOCK WASHERS

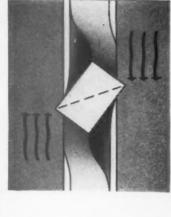


REASON: STRUT-ACTION PLUS SPRING-TENSION





A tight strut-action lock is produced by each tapered-twisted tooth at initial contact!



Under vibration, spring-tension forces teeth to bite deeper and increases locking power

WRITE FOR FREE TEST KIT

vide positive vibration protection

for any screw or nut connection!

teeth biting into both surfaces pro-

Powerful multiple tapered-twisted

SHAKEPROOF

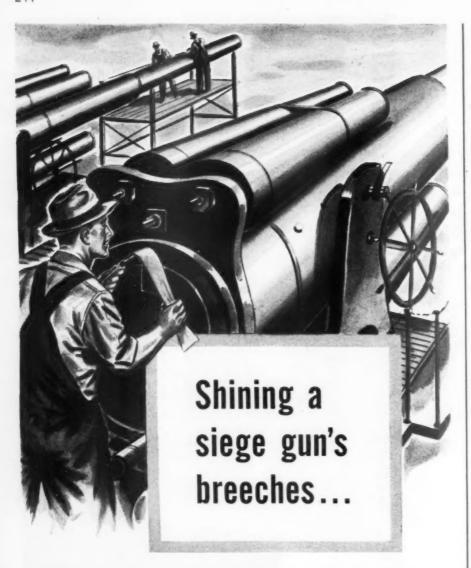
Distributor of Shakeproof Products Manufactured by ILLINOIS TOOL WORKS

2501 North Keeler Avenue, Chicago 39, Illinois

Plants at Chicago and Elgin, Illinois • In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

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nd a re lp ns



with Armour's Electro-coated Alundum Cloth!

Extra ounces of weight...minute burrs ... scratches! These are the flaws which can lead to fatal fractures in America's giant rifles.

By polishing metal parts quickly and efficiently, Armour's Electro-coated Alundum Cloth is protecting American armament from fatigue failures, friction and unnecessary heat. And Alundum Cloth, an aluminum oxide abrasive, is giving the same performance on plastics and other materials!

Quick, even cutting

The patented electrostatic manufacturing process coats Alundum Cloth with uniformly sized, uniformly spaced abrasive grains...your assurance of a keener, more evenly cutting abrading tool. And each razor-edged abrasive grain is cemented to the cloth backing for keeps ...providing the permanence that protects an unbroken flow of work.

Armour's Alundum Cloth is adaptable to many operations in your plant. Especially economical is the fifty-yard economy roll which halts those timewasting steps between stock room and

We'll help you...right on the job!

If you desire on-the-job planning, Armour's technical counselors will gladly help you. For their assistance, simply telephone your Armour branch or write to the

Armour Sandpaper Works, Chicago.



ARMOUR SANDPAPER WORKS

Division of Armour and Company

1355 WEST 31ST STREET . CHICAGO 9, ILLINOIS

(Continued from page 240) ations there, is announced by W. V O'Brien, manager of the division. At the same time it was announced that J. S. Overstreet was appointed assistant manager of sales for the cable section at Schenectady, and J. J. Curtin assistant manager of sales for the magnet wire section at Fort Wayne.

1 1 1 SCOREBOARD STIMULATES PRODUCTION

Coincident with recent appeals from Government officials that production of war equipment in certain industries will have to be increased, is an announcement by the Brown Instrument Co., division of Minneapolis-Honeywell Regulator Co., that it has put into effect one of the oldest, yet admittedly most efficient means of



Efficient Means For Stimulating Production

stimulating production—the scoreboard method, showing production required from each department.

Production goal scoreboards will be erected in various key departments of the Philadelphia instrument company. Each board will contain a head drawing of Uncle Sam who is quoted saying, "I Need Instruments to Make More. . . . This month please ship . . . etc." A space is left for the numbers of instruments required from each key department. The scoreboard is livened by illustrations of warplanes, 100-octane gas storage tanks. block-buster bombs, tires, machine and heavy caliber guns, tanks, etc. Each board will exhibit the Army-Navy "E" for excellency of production pennant which has been awarded to the company.

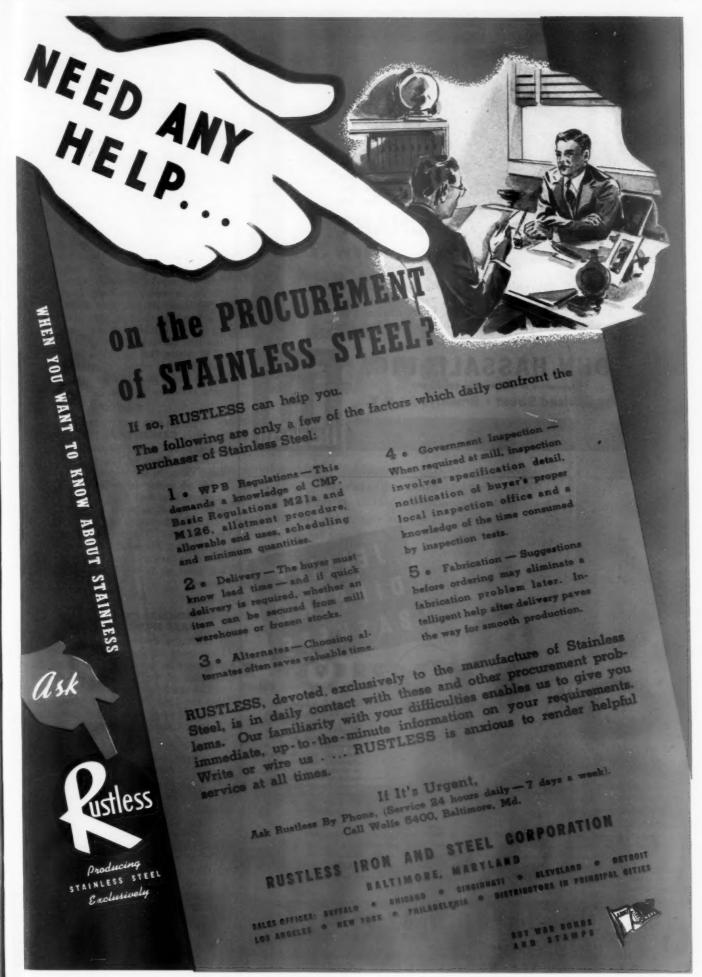
HELLER BROS. CO. ACQUIRES GOODWILL OF CLEVELAND FILE

According to Fred H. Stout, vice president in charge of sales, Heller Bros. Co., manufacturers of files, rasps, tools and steel, Newark, N. J., has acquired the goodwill, trade name and patents of the Cleveland File Co., Cleveland, Ohio. John E. Nicklis, formerly associated in executive capacity with the Cleveland Co., is now with the Heller Company.

DEVELOP MACHINE FOR DEHYDRATED PACKAGING

Development of a new machine for dehydrated packaging to speed overseas shipment of vital replacement parts, is announced by the Package Machinery Co., Springfield, Mass. The machine is port-

(Continued on page 246)



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The metal to be used in a particular Jelliff basket is determined by the cleaning and pickling cycle. It is obviously impossible to lay down any hard and fast rules, due to the wide variance in such influencing factors as construction of parts, character and strength of solution, methods of handling, temperature, possible galvanic action, etc. If you supply us with these essential facts, we will recommend the basket best suited

The C.O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE . SOUTHPORT, CONN.

(Continued from page 244) able and is said to eliminate the hand method of packing and of greasing and degreasing metallic parts that require protection against rust and corrosion. Manufacturer states the machine is highly adjustable and seals in thermoplastic bags such diversified products as motors, shafts, magnetos, carburetors, cylinder assemblies and fuel and oil pumps.

9 9 9 SHERWIN-WILLIAMS BUYS USED S-W CARTONS

Declaring that every used S-W shipping carton is urgently needed, the Sherwin-Williams Co., advises it will pay 5¢ for every usable shipping carton returned to it. These may be shipped by freight or truck collect to the nearest SW factory. The cartons must have been opened without damage, collapsed flat, and tied into uniform compact bundles of about 50 lbs. to prevent damage. If cartons are stitched or stapled, care must be exercised not to damage the cartons in removal of stitching or staples. "This is not just an economy measure" states the S-W notice, "but a full fledged emergency caused by a critical shortage of carton board-with no relief in sight. No shipping cartons-No paint!"

1 1 1 INFRA-RED HEAT REFLECTING CAMOUFLAGE PAINTS

Infra-red heat-reflecting camouflage paints developed by The Arco Co., Cleveland, Ohio, in use experimentally on the roofs of motor buses are said to have demonstrated that these dull finish paints reflect almost as much heat as aluminum paint. Production is now entirely devoted to war uses. The company has granted the United States Government the free use of its basic patent on infra-red reflecting paint up to the limit of its requirements.

7 7 7 PRINCIPAL DIVISION NAMED LAKE SHORE TOOL WORKS

With the design and manufacture of high speed cutting tools becoming more and more its dominant activity, the management of the Carbide Tool Company of Chicago has renamed its principal division the Lake Shore Tool Works—main office and plant being at 816 No. Kostner Avenue, Chicago, Ill.

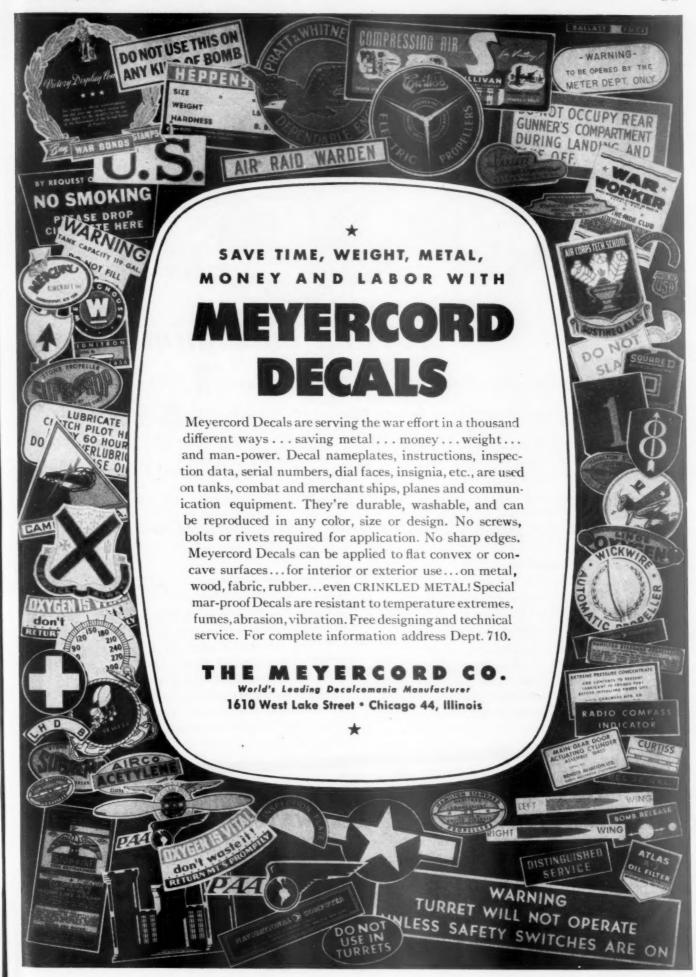
NEW MOTION PICTURE FILM RELEASED BY DUPONT

"Soldiers of the Soil," a forty-minute motion picture dedicated to America's farmers, is announced by the E. I. duPont De Nemours, Co. Wilmington, Del

DeNemours Co., Wilmington, Del.
Produced in Hollywood with an all-Hollywood cast and sponsored by Du Pont, it is announced that the film will be made available nationally as rapidly as prints of it can be turned out.

The picture is a dramatic portrayal of how one American farmer, John Landis, found his answer to the duty-call of his country when his older brother, David, a sergeant of Marines, was invalided home

(Continued on page 250)



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How to Floor Your Boss 248



.. and make him like it!

My first day on the job...and the boss says "Get, us an agehardening bronze that forges and machines easily." So I phoned Chase Brass, like the PA at the old place always told me. Chase said "Telnic Bronze." It really floored the boss when he got the answer that fast. Don't know why, though. Doesn't everybody know the best buying rule is Call Chase First?

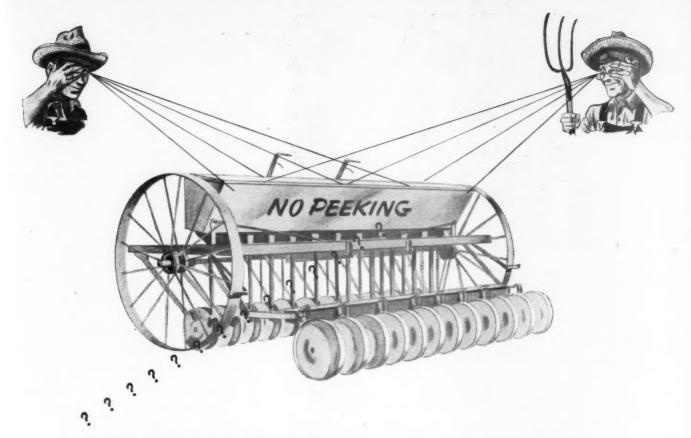
> YES, it's as simple as that. A phone call to the nearest Chase Sales Service Office puts you in touch with a staff familiar with brass and copper alloys. The answers to most of your questions are at their fingertips . . . on really tricky problems they'll put the Chase research organization to work for you.

You'll find warehouse stocks of many of the copper alloys at the Service Office too ... ready for quick delivery to your plant (on authorized CMP orders, naturally). On large orders, the Warehouse can usually make partial shipment to keep you going, with the mill following through on the rest of the material.



Remember - Chase Service is as close as your phone. CHASE BRASS & COPPER CO., Incorporated, WATERBURY, CONNECTICUT

Subsidiary of Kennecott Copper Corporation BOSTON *ROCHESTER PROVIDENCE SEATTLE -NEW YORK PHILADELPHIA MILWAUKEE -SALES SERVICE *WASHINGTON CHICAGO SAN FRANCISCO PITTSBURGH AND BALTIMORE WAREHOUSE STOCKS KANSAS CITY, MO.* CLEVELAND *INDIANAPOLIS ST. LOUIS -* Indicares Sales Office Only ATLANTA * -HOUSTON



WHAT'S SO SECRET ABOUT A FARM MACHINE?

Perhaps you're interested in farm machinery. Perhaps not. But the simple idea of designing a machine, or product, with more practical "see through" utility is one that should appeal to you.

We use farm machinery as an example. Why not make the hoppers of grain drills, seeders, planters or lister planters so the farmer could watch what is going on inside ... watch the level of the seed ... know that it is feeding properly ... know exactly when refilling is required?

Or take the many working parts of a combine, or a corn sheller. Or a cream separator? How much more convenient if the user could always see that these parts are operating properly?

It's a simple idea, with a simple answer: make better use of a transparent material. Glass, of course. Not the glass of years ago. But modern L·O·F glass.

Glass is one of the few materials you can see through. (It's tops in that) But there's a lot more to this material. Dimensionally, glass is one of the most stable materials. Its surfaces are among the hardest and smoothest known. Nonporous. Acid-resisting. Unusually resistant to abrasion.

And modern L·O·F glass is strong. The way we temper glass a square foot, quarter-inch thick will withstand a pressure of 60 pounds per square inch and has a modulus of rupture of 30,000 pounds per square inch. We can laminate it with other materials. Give it to you with a metal collar. Or in multiple units that insulate. Or in special types that repel the sun's heat or ultraviolet rays. The final product may be had in flat sheets or bent shapes.

So just remember when you design any product for the home, for industry, or for any structure, there is a material that's strong and long lasting... and transparent. It's glass!

Perhaps glass fits your product or plant. Won't you write us about any use that interests you? That's the way to really find out. Libbey Owens Ford Glass Company, 17113 Nicholas Building, Toledo 3, Ohio.



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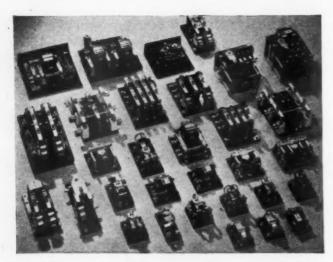


LIBBEY · OWENS · FORD

A GREAT NAME IN



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RELAY BULLETINS

These Bulletins are available describing light, intermediate and heavy duty relays in various types and contact combinations. Send for data bulletins of interest to you.

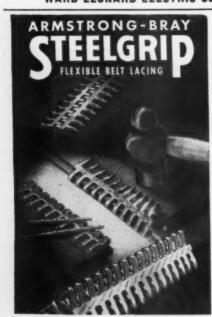


WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) devices since 1892.

WARD LEONARD ELECTRIC CO., 50 South St., Mount Vernon, N. Y.



Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and

BELT HOOKS
Applied with any stan-

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste.

ARMSTRONG - BRAY & CO.
"The Belt Lacing People"

"The Belt Lacing People"
5378 Northwest Highway Chicago, U.S./



Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

Chase Red-Tye Parts bags are available in many types and sizes ... with or without tags or envelopes attached for letter, invoice or instruction sheet.

> Write for samples and prices. Also inquire about Chase Red-Tye mailing bags . . . for the quick, safe delivery of small replacement parts.

CHASE BAG CO.
302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.
ONE OF THIRTEEN GREAT FACTORIES

(Continued from page 246) from the battlefront. Covering a generation of life on the Landis family's farm, the whole broad sweep of agriculture in its relation to the war and the pressing need for food and fiber passes under re-

view.

The sponsors said the purpose of the motion picture is two-fold: to help the war effort with emphasis upon food production, and to aid the farmer by outlining the abundance of scientific methods and equipment at his command, as the result of chemical accomplishments made during the past ten or fifteen years.

Documentary on its facts, the film deals with people and life, with the heartbreaks and triumphs of a typical American family whose "feet are in the furrow."

SOLUBLE NITROCELLULOSE NOW AVAILABLE

Hercules Powder Co., Wilmington, Del., announces that soluble nitrocellulose is now available to users in the United States as well as abroad, without restriction. On May 14, 1943, soluble nitrocellulose general preference order M-196 was revoked, permitting purchase without the approval of the War Production Board, but the supply remained limited. Since then, the supply of Hercules nitrocellulose has improved and priority ratings are no longer required.

fiber glass service station at burlington, n. j.

The Owens-Corning Fiberglass Corp., Toledo, O., announce the establishment of a central servicing, quality control, and distribution point at Burlington, N. J. The new center will be housed in a building formerly occupied by the Burlington silk mill. Here will be centralized all servicing of outside manufacturers and customers formerly handled by the Toledo general offices and the factories in Newark, Ohio, and Ashton, R. I.

WHAT THE AMPLIDYNE DOES

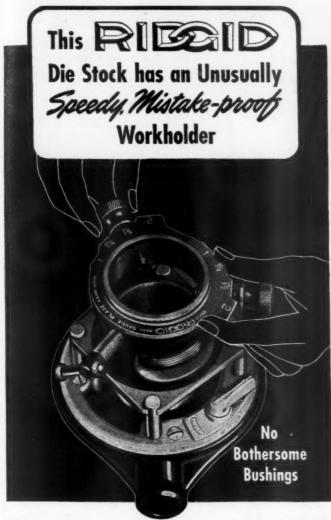
The amplidyne, a G-E engineering development which harnesses the usually troublesome short circuit and puts it to work, is the subject of an attractive new 36-page bulletin (GEA-4053) recently issued by the General Electric Company, Schenectady, N. Y. Profusely illustrated, the publication describes comprehensively the engineering details and fundamental functions of the amplidyne.

UNION METAL ACQUIRES SUPERIOR SWITCHBOARD & DEVICES CO.

The Union Metal Mfg. Co., Canton, Ohio, has purchased the controlling stock of the Superior Switchboard and Devices Co., Canton, Ohio. Officers of the newly purchased firm are: President, C. A. Orr, president of Union Metal; secretary, C. A. Streb, secretary of Union Metal; treasurer and general manager, V. J. Lajeunesse, formerly manager of lighting sales for Union Metal. Also on the executive staff are A. G. Reynolds, assist-

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(Continued on page 252)



● No bushings to fool with when you put this No. 1R die stock on a pipe—lock it to size with the thumb screws, tighten with one clamp screw and start threading. And threading is easier and smoother because ac-

tion is direct - handle to head to chasers. No cock-wobbling - floating posts carry no load, only taper the threads, are separately replaceable. Sets of alloy or high-speed steel chaser dies for 1", 11/4", 11/2" and 2" pipe. A popular priced die stock of ruggedsteel-and-malleable construction with many work-saver features you like. Ask for it at your Supply House.



assures you easy adjustment to pipe size

That ► guarantee not only saves you all wrench housing troubles, repairs and expense, but it guarantees efficient wrench performance. The housing won't break or warp, so the full-floating hookjaw and adjusting nut always work freely and easily—in all sizes, 6" to 60". But you get also the advantage of the no-slip jaws, handy pipe scale on hookjaw and comfort-grip I-beam

handle—your men enjoy using the REDID that saves time, work and money. Ask for it at your Supply House.

TOOLS *

New RIDGID Strap Wrench for polished pipe or tubing—easy positive operation—typical RIDGID features.

THE RIDGE TOOL COMPANY

Buy RIEQID Pipe Tools at Supply Houses Everywhere



ELYRIA, OHIO, U.S.A.



Fast-Working Tools for War. . . and the Busy Peace that's Coming



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Lanting the ssist-

When your Shipper says...

"OUR SHIPPING PACKAGES MUST PREVENT RUST"



SINGLE PACKAGE SHIPPING CONTAINERS

NO-OX-ID combination of coating, wrapping, and sealing is used. Such packages usually consist of a corrugated carton wrapped with NO-OX-IDized Wrapper and dip-sealed in heated NO-OX-ID Sealing Compound. The finished part in the package illustrated was coated with NO-OX-ID and then wrapped with NO-OX-IDized Wrapper.

MULTIPLE PACKAGE SHIPPING CONTAINERS

The inside box liner is of NO-OX-IDized Wrapper which is hot-sealed, forming a water vapor barrier. The contents of the individual cartons may or may not be treated with NO-OX-ID and wrapped with NO-OX-IDized Wrapper. Shipments prepared in this manner will withstand almost any corrosive condition incident to air or surface transportation.

Combination of NO-OX-ID and NO-OX-IDized Wrappers

Metal parts of all kinds can be protected with a coating of NO-OX-ID applied by dipping, spraying, or brushing. Precision parts may be still further protected by wrapping with NO-OX-IDized Wrapper which is conformable to irregular surfaces. In such a package air spaces are reduced to a minimum. Write us . . . tell us your problems involving rust prevention. Dearborn Chemical Company, Dept. AA, 310 S. Michigan Ave., Chicago 4, Illinois.

"THE LEADER FOR 25 YEARS"



·[For Victory, Buy United States War Bonds and Stamps].

(Continued from page 250)

ant secretary and vice president in charge of engineering, and T. R. Davies, vice president in charge of sales, both of whom held the same position with the switchboard organization.

PRINCIPLES OF OPERATING ELECTRICAL INSTRUMENTS

A new General Electric publication, "Electric Instruments, Principles of Operation", presents a concise discussion of the characteristics of instruments, what makes them operate, and the individual limitations of the various types. Designated GET-1176, it is available on request to the company at Schenectady.

SAN FRANCISCO COMPANY TAKES ON FREDERICK POST LINE

The Frederick Post Co. of Chicago announces that the 20th Century Blue Print Company, San Francisco, Calif., has taken on the complete line of Post drafting materials, blueprint paper and kindred sensitized products. The San Francisco Company recently moved into new quarters at 334 Bush St., where they also offer a complete blueprint and tracing reproduction service.

MOVE ADMINISTRATIVE DEPARTMENTS TO NEW YORK

North American Philips Co., Inc., Dobbs Ferry, N. Y., is moving its commercial and administrative departments to the Pershing Square Building, Park Ave. at 42nd Street, New York. They will occupy the entire fourth floor together with Philips Metalix Corp., and Philips Export Corp. which now offices in the Hotel Roosevelt Bldg., New York. The Industrial Electronics Equipment Divn. which markets Norelco electronics products, will also move to the Pershing Square Building. Purchasing Department of North American Philips Co., Inc., will remain at Dobbs Ferry.

BUREAU OF STANDARDS ANNOUNCES FOUR NEW COMMERICAL STANDARDS

The following newly accepted commercial standards have been announced by the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C.:

Stock Fir Door, CS 111-43.

Earthenware Plumbing Fixtures, CS

Treading Automobile and Truck Tires, CS 108-43.

Boys' Waists and Shirts, CS 14-43.

HOW TO MAINTAIN ELECTRIC EQUIPMENT IN INDUSTRY

New 372 page book, "How to Maintain Electric Equipment", has been published by the General Electric Company, 1 River Road, Schenectady, N. Y. The price is \$1.75. The book contains more than 500 illustrations, dozens of new tables, many hitherto unpublished chartsfi and recommendations prepared and checked by design, application and field engineers. It

(Continued on page 256)

OUT GOES TAPPING-IN COME Savings

Instrument Manufacturer
Questions Every Fastening
and changes to the simple
P-K Self-tapping Screw method!

TOP — P-K Type "A" Screws fasten instrument to wood housing . . . provide better holding power than wood screws because they are more mechanically correct and are threaded to the head.

CENTER - P-K Type "Z" Screws fasten index roller to 1/32" steel panel.

RIGHT — P-K Type "Z" Screws fasten steel cover to 1/16" steel shield container, and coil shield to 1/16" steel chassis.

 $\mbox{BELOW}-\mbox{P-K}$ Type "A" Screws fasten instrument to 1/32" metal housing.

Multiply the fastenings illustrated here by many hundreds of similar war-needed assemblies made daily in the plant of the Radio City Products Co., New York. You will then have an idea of the many vital work-hours this company saves by adopting P-K Self-tapping Screws wherever possible, and avoiding tapping holes for machine screws.

The simple P-K Self-tapping Screw method of making fastenings not only does away with tapping and tap maintenance. It also ends the slow washer-placing and nut-running that goes with bolts; the difficulties of riveting in hard-to-reach places; the need for inserts in molded plastics. With Selftapping Screws, only one easy operation is necessary... turning the Screws into plain holes. No special tools or skilled help are required.

Whether your assemblies are of thin or heavy sheet metal, of castings or plastics, you'll find, in 7 out of 10 cases, that you can simplify work, and improve products with P-K Self-tapping Screws. Question every fastening job on your drafting boards, and on your production lines, now! Ask for a P-K Assembly Engineer to call and help you check your fastening jobs for opportunities to save time, labor, and money. If you prefer, mail assembly details for recommendations. Parker-Kalon Corp., 202-204 Varick St., New York 14, N. Y.



PARKER-KALON

Quality-Controlled

SELF-TAPPING SCREWS

Give the Green Light ... to War Assemblies



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Inc., comtments Park They

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Maintain published , 1 River price is than 500 es, many

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MAKE ONE BEARING OUTLIVE TWO!



One plant that regularly had two or three bearing failures a month writes us, "We have had only one bearing failure in five years since using LUBRIPLATE"... another writes, "Pulled our ball bearing temperatures down from 170° to 130°F"... still another, "If LUBRIPLATE cost \$1.50 a pound we could still afford to use it."

BALL BEARING LUBRIPLATE

Over a period of years this outstanding grease type lubricant has reflected superior performance on the general run of ball and roller bearings operating under normal conditions at speeds up to 5,000 R. P. M. and temperatures from zero to 300 degrees F.

Long time users of BALL BEARING LUBRIPLATE everywhere attest to its superiority in providing cool and quiet operation – protection against corrosion, and of major importance, substantial reduction in bearing replacement costs.

Write today for your copy of Bulletin No. 1-43 containing valuable data on the lubrication and care of anti-friction bearings.

LUBRIPLATE DIVISION FISKE BROTHERS REFINING COMPANY

Newark, N. J. SINCE 1870 Toledo, Ohio DEALERS FROM COAST TO COAST

7 FACTS ABOUT LUBRIPLATE

1. LUBRIPLATE produces an ultrasmooth, wear-resisting bearing sunface.
2. LUBRIPLATE reduces friction, thus
lowering maintenance and power costs.
3. LUBRIPLATE resists rust, corrosion
and pitting. 4. Most LUBRIPLATE
products are white. LUBRIPLATE assures clean lubrication. 5. LUBRIPLATE
outlasts ordinary lubricants many times.
6. LUBRIPLATE is economical—a little
goes a long way. 7. LUBRIPLATE is
available in fluid and grease types for
every need.



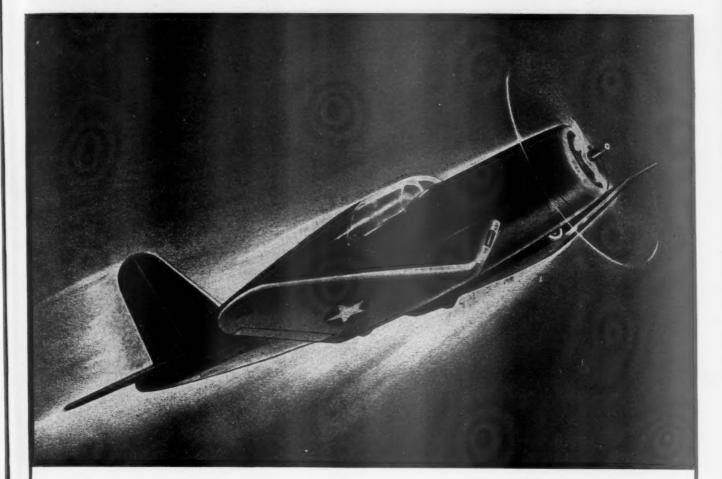
THE MODERN LUBRICANT that Arrests Progressive wear

"Its the Film"

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TRANSPARENT PLASTICS BY

Reynolds

Our organization, constantly improving its methods, specializes in plastic fabrication by compression . . . injection . . . extrusion . . . and sheet forming.

Light weight, transparent turret canopies, by Reynolds, help to give the margin of Victory to Allied fighters and bombers.

Every vital ounce of weight, saved by plastics, means they can fly higher...faster...and farther...while carrying heavier loads of bullets and bombs...Let Reynolds take your plastics problems, design or redesign, engineer, build the molds and produce to your satisfaction.

REYNOLD'S MOLDED PLASTICS

CAMBRIDGE, OHIO

SALES ENGINEERS IN ALL PRINCIPAL CITIES

DIVISION OF REYNOLD'S SPRING COMPANY, JACKSON, MICHIGAN



IF YOU HAVE A VIBRATION PROBLEM . . .

Originally developed for use in aviation, where loose fastenings can not be permitted in spite of severest vibration, Boots Self-Locking Nuts provide a simple solution wherever there is a fastening problem. Boots Nuts can't work loose.

One-piece, all metal, Boots have these of all government aviation agencies.

important advantages over other nuts:

- 1. Greater re-usability in mainte-
 - Proof against corrosive action of oil, water, or chemicals.
- 3. Resistance to high temperature. Boots Nuts meet exacting specifications of all government aviation agencies.

There's a BOOTS NUT for every application

ROL-TOP

BOOTS



BOOTS AIRCRAFT NUT CORPORATION

GENERAL OFFICES, NEW CANAAN, CONNECTICUT



(Continued from page 252)

is a compendious volume of tips on how to keep General Electric equipment in topnotch condition.

Preventive-maintenance schedules and trouble-shooting charts are included on nearly all types of apparatus. Photos and diagrams give suggestions on what to do to get maximum performance and longest life out of equipment, and also indicate what constitutes good maintenance procedure and some of the troubles that may arise from improper care.

UNITED STATES ARMY STANDARD COLOR CARD

At the special request of the Quartermaster General of the U.S. Army, the Textile Color Card Assn., 200 Madison Ave., New York 16, N. Y., has revised the United States Army Standard Color Card showing the official standarized shades of olive drab, khaki and drab sewing threads, the first edition of which was brought out by the association last year. The revised 1943 edition, just issued, shows like the first, six colors in thread tassels and lists opposite each sample the various items for which each thread color is used. A practical innovation in the new card, it was pointed out by Margaret Hayden Rorke, managing director of the Association, is the addition of certain official shade numbers assigned by the Quartermaster Corps to fabrics for clothing and equipage for which the sewing threads are designated.

CITY PURCHASING AGENT POST CREATED AT OSWEGO, N. Y.

A separate post of city Purchasing Agent has been created by the Common Council of the city of Oswego, N. Y., divorcing the position from that of city clerk. Purchasing Agents may find of especial interest, the reported reasoning back of a negative vote by one of the alderman, to the effect that the sentiment of the people of his ward "was against the establishing of a separate office because of the scarcity of materials and equipment.

MOVING PICTURE FILMS ON DIAL INDICATOR AND DIAL INDICATOR GAGES

Two new moving picture films, one on the Dial Indicator, and one on Dial Indicator Gages, are being released by Federal Products Corp., Sales Promotion Department, Providence, R. I. The first is a twenty-minute film showing in complete detail the principles of Direct measuring and of precision measuring. The second is an eighteen-minute demonstrating how dial indicator gages are used to control the dimensions of interchangeable workpieces produced by mass production methods. Direct measuring dial indicator gages and gages for fast sorting of material for size are shown in use.

There is no charge for one-time showing except for return transportation. All films are 16 MM Kodachrome (full color). The films cannot be projected on

(Continued on page 258)

"In my business little things make a big difference!"

ON the surface a piping contractor's work looks simple: Just size up the specs and figure out a bid that will take the job!

But that's only the way in. If you want to do a good job and come out right on it, you've got to make every move count. And you can't do that unless you're working with the right kind of stuff.

Take welding fittings: If Weld-ELLS* are specified I know the job will move. It will move because those permanent markings of size and weight on every fitting stop the groping, the false starts and the mistakes—because those accurate quarter-markings help to guide the work—because the tangents make lining up easy—because the bright, lathecut bevels enable the welder to do a better job faster.

When I say this, I'm not overlooking the specifier's end of the job, either. It seems to me that any engineer will concede that WeldELLS are more than "equal" to any other fittings on a purely engineering basis.

For better welded piping at lower cost give me WeldELLS—the welding fittings that have everything!

* WeldELLS and many other Taylor Forge products are produced in Byers Genuine Wrought Iron.

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P. O. Box 485

NEW YORK OFFICE: 50 CHURCH ST. • PHILADELPHIA OFFICE: BROAD ST. STATION BUILDING

★ WeldELLS alone have all these features:

- Seamless greater strength and uniformity.
- Tangents.—keep weld away from zone of highest stress—simplify lining up.
- Precision quarter-marked ends
 —simplify layout and help insure accuracy.
- Selective reinforcement provides uniform strength.
- Permanent and complete identification marking—saves time and eliminates errors in shop and field.
- Wall thickness never less than specification minimum—assures full strength and long life.
- Machine tool beveled ends.—provides best welding surface and accurate bevel and land.
- The most complete line of Welding Fittings and Forged Steel Flanges in the World insures complete service and undivided responsibility.

WeldELLS are just one of many Taylor Forge products that are vital to war and victory. An example is huge rolled steel rings—an important part of U. S. tanks now in action.

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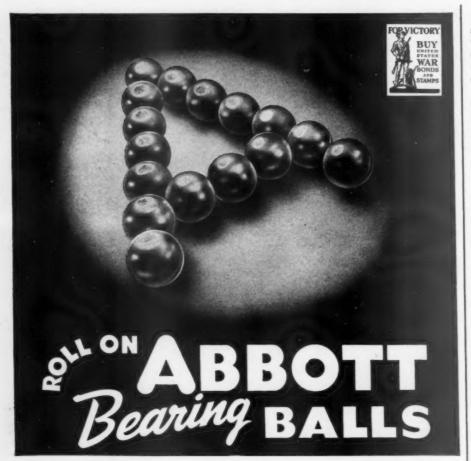
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STAMINA makes them Carefree!

The responsibility to keep assembly lines moving, uninterrupted, is a daily performance routine with ABBOTT BEAR-ING BALLS.

ABBOTT Staming makes it so!

This carefree performance is the result of rigid inspection methods plus the "know how" by ABBOTT to produce BEARING BALLS having the Stamina vital to war and peace time needs.

In heavy duty assemblies or light, intricate machanisms, it's all in a day's work with ABBOTT — they carry the load as planned . . . Specify "ABBOTT".

 Let us know your Bearing Ball problems. If it's deliveries, an estimate will be gladly sent.

ABBOTT BEATING BALLS
THE ABBOTT BALLS HARTFORD, CONN. U.S.A.

(Continued from page 256)

a silent projector. Films are loaned with the understanding that they will be carefully handled and returned in good condition promptly. They may be purchased for permanent use.

The two films are claimed to be the only educational films available on the principles and uses of Dial Indicators and Indicator Gages, with the exception of a ten-minute black and white film made by the government.

f f f TELLS ABOUT MYRIAD USES OF FELT

New booklet, Felt Facts, issued by The Felt Association, Inc., New York, N. Y., tells the story of the manufacture and some of the myriad uses of wool felt. It is written in simple, non-technical style for the layman and the various steps in the manufacturing processes are described and illustrated. It directs attention to the many applications of felt in engineering and mechanical fields as an alternate for rubber, cork, certain fabrics and plastics and other priority materials. It also treats of the use of wool felt for vibration-isolation, filtering, grinding and polishing,-filters in hypodermic needles and padding for eight-ton tanks.

WAR WINNING SUGGESTIONS

Informative Technical Bulletin No. 5, listing War Winning Suggestions in the War Production Drive, is now being released by War Production Drive Headquarters, War Production Board, Washington, D. C. The bulletin is a compilation of suggestions which have been certified to War Production Drive Headquarters by Labor-Management Production Committees. Complete information on suggestions that are numbered is available. This data usually contains a sketch, blue print, or photograph, as well as full descriptions with necessary specifications.

AID IN TOOL CONSERVATION

Stickers and posters on tool conservation, will be supplied without charge by the Conservation Divn., War Production Board, 11th & H Sts., Washington, D. C. The two-color stickers, 2 x 3 inches come in pads of 100 and are suitable for attaching to company letterheads, shipping crates, or for attachment to machines. A three-color four-in-one poster, 27" x 41", is available to users of cutting tools. It may be cut into four individual posters. Subjects of the parts are "Put Tools Away", "Use Soft Headed Hammer". Put Blocks Close, Clamp Work Tight", and "Look Out for Point of Drill".

NEW COURSES IN PRIORITIES REGULATIONS AND PURCHASING

Course in Priorities Regulations is being given at the City College School of Business Evening Session, 17 Lexington Ave., New York, N. Y., by R. G. Bousfield of the New York office of the War Production Board. Also offered (Continued on page 260) NG

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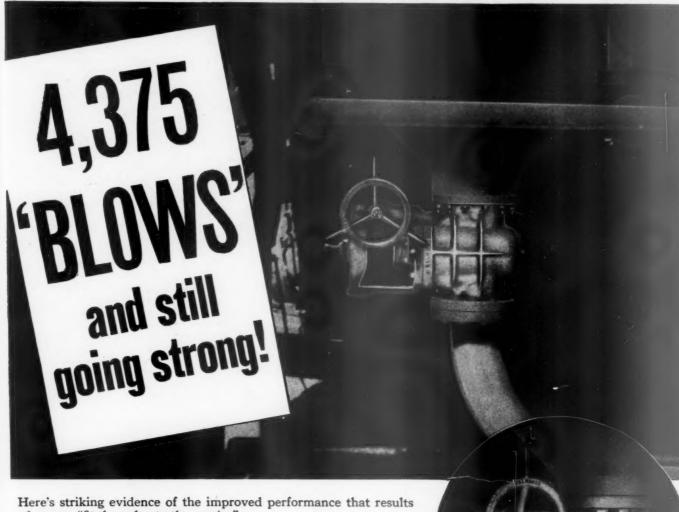
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— FIT THE VALVE TO THE SERVICE –



when you "fit the valve to the service":

At one mill, digester blow-off valves were good for an average of 1000 "blows", after which they had to be reconditioned. That meant lost time ... delayed production.

Then a Walworth field engineer recommended Walworth Ball Bearing type Lubricated Plug Valves. The result? Each Walworth valve on five digesters has recorded 4,375 "blows"—and the valves are still going strong. This represents more than 21/2 years of continuous service without interruption to production. Other mills have installed this same Walworth valve on digesters with equally favor-

You can assure similar excellent performance by fitting the valve to your particular service requirements. Whatever the need-for any liquid, gas, or fluid mixture-Walworth has the right type valve, and will provide the engineering service to assure its proper selection.

> You'll find pertinent information on Walworth's complete line of valves, fittings, pipe, and pipe wrenches in the new Walworth Catalog 42. Included are 78 pages of practical engineering data that simplify valve selection and make piping layouts easier. Write, on business stationery, for your free copy. Address: Walworth Company, 60 East 42nd St., New York 17, N. Y. Dept.N-11.

Walworth Fig. 1659 F, Series 300, worm-gear operated Lubricated Plug Valve is made of cast steel. Ball bearings help to maintain easy opening and closing—from

full straight line port opening to dead tight shut-off with only 90° rotation of the plug.

There is no gland adjustment required on these valves. In repacking, special plastic packing sticks are easily fed into the stuffing box through a side connection. Valves may be repacked under pressure in either the open or closed position.





BOSTON WORKS NEWANEE WORKS WALWORT alves and fittings



DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



(Continued from page 258)

is an evening course in Purchasing in which special emphasis is placed on problems caused by the war. Such subjects as approved procedures for procurement, receiving, handling, storing and moving materials are treated. This course is given by A. Taller, specifications engineer for the Board of Higher Education and former president of the Purchasing Agents division of the Retail Dry Goods Association. Job training booklet describing these and other 125 other courses and business opportunities is available on request.

ALLEGHENY LUDLUM OFFERS FILM ON WELDING STAINLESS STEEL

A recently-completed contribution to the war production program is the new Allegheny Ludlum motion picture "Welding Stainless Steel". Its purpose is to serve as an aid in teaching welding students, as well as welders familiar with carbon steel welding, the fundamentals of working with stainless steels.

While primarily produced to explain stainless steel welding in simple terms that a shopman can understand, there is much to interest the most experienced metallurgist or engineer in this 16 mm. full color sound film. Particularly unique are the extreme close-ups of the arc at work, greatly magnified so that the action of the protective flux and the very melting of the rod metal can be clearly seen. All in all, "Welding Stainless Steel" is a most complete presentation of the subject, and is, in fact, the only film available dealing exclusively with the welding of these alloys.

This two-reel film, which takes about 25 minutes to show, will be sent without charge, express prepaid, upon valid request by companies, trade or technical groups, industrial schools or colleges, etc. In all instances, however, it is advisable to give several alternate dates for the showing, so that arrangements can be completed to have a print available for one of those dates. Requests for its use should be addressed to Allegheny Ludlum Steel Corporation, Brackenridge, Penna.

TECHNICAL ADVISORY SERVICE FOR SMALLER WAR PLANTS

A Technical Advisory Service set up by regions throughout the country to serve the interests of small plants has been established by the Smaller War Plants Corporation, is announced by Brigadier General Robert W. Johnson, Chairman. The Service will put at the disposal of the small manufacturer who requires technical research in the solution of a production problem, information drawn from governmental agencies, trade associations, technical and scientific organizations, technical magazine editors, and the research laboratories of educational institutions and private industry.

This is the first time that small plants have been givin the opportunity to obtain technical information through one central government agency and is expected to be of tremendous assistance to small manufacturers in rounding out their production

capabilities. The Technical Advisory Service springs from an idea which has been applied successfully in private business since 1937 by Bert H. White, vice president of the Liberty Bank of Buffalo, N. Y., now on leave to serve as a major in the Army Air Force, from which he was borrowed by SWPC to set up this service.

The list of typical inquiries is obviously manifold but random examples include technical information on how to overcome porosity in casting; how to prevent sewing machine needles from overheating; how to find a market for scrap rayon; where to find a special adhesive to cement heavy fabric to metal; and a variety of questions regarding developments in wood, metallurgy, plastics and electronics.

The Service itself does not engage in industrial research or testing. It enjoys the voluntary and helpful cooperation of the various government agencies, as well as that of an unlimited number of research laboratories, including those of universities, private institutions and industry. In a few isolated cases, where the nature of the information sought is such that it only can be obtained from commercial testing laboratories or professional service organizations, the technical advisory consultant will recommend several recognized leaders in that field with whom the applicants can discuss cost of service directly. Otherwise, Technical Advisory Service is without charge to all small manufacturers.

U. S. GOVERNMENT MANUAL

Division of Public Inquiries, Office of War Information, Washington, D. C., has released United States Government Manual, Summer 1943. It details the Who, What, Why, When, Where and How of the Federal Government. Emergency War Agencies, the Contress, the Courts, Department and Agencies, Publications and Abolished Agencies are covered. The manual is issued periodically, the price of three issues being \$2.75. Sinkle copies \$1.00 postpaid. Copies may be ordered from the Superintendent of Documents, Washington, D. C., the Office of War Information, Washington, D. C., and leading bookstores.

RECORDS MUST BE KEPT OF MRO QUOTAS

In computing quotas for maintenance, repair, and operating supplies under CMP Regulation No. 5, and in charging purchases against these quotas, manufacturers are permitted to exclude the cost of the labor involved, in carrying on such operations, the War Production Board announces. However, if labor costs are excluded with respect to MRO purchases they must be excluded with respect to the quota computation.

This ruling is contained in Direction No. 13, to CMP Regulation No. 5, which also points out that items included in Lists A and B of Priorities Regulation No. 3 may be excluded from computation

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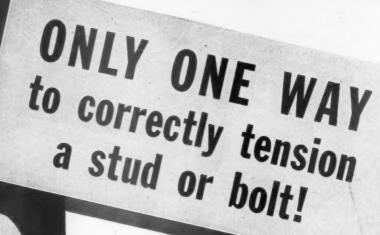
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Snap-on Torqometers insure accuracy...tell tension as nut is tightened!

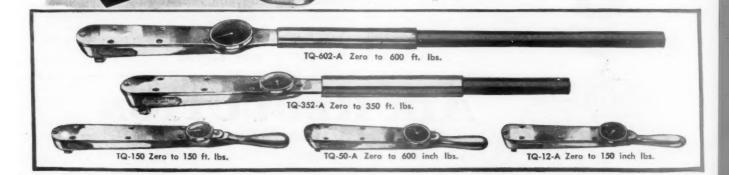
The only way to be certain of correct tension is to know the tension . . . accurately . . . as the nut is tightened. In many operations "guesswork" tightening can cause endless trouble. Snap-on Torqometers make precision tensioning as simple as reading a dial. Their use insures predetermined accuracy on fine assembly work, and prevents mechanical distortion in cylinder heads, bearings, steam flanges and transmission systems. As easy to use as an ordinary wrench. Their accuracy is no way affected when used with extension bars, universal joints, etc.

Snap-on Torqometers are available in a wide range of capacities, from 150 in. lbs. to 2,000 ft. lbs. Full information available on request. Write P-175.

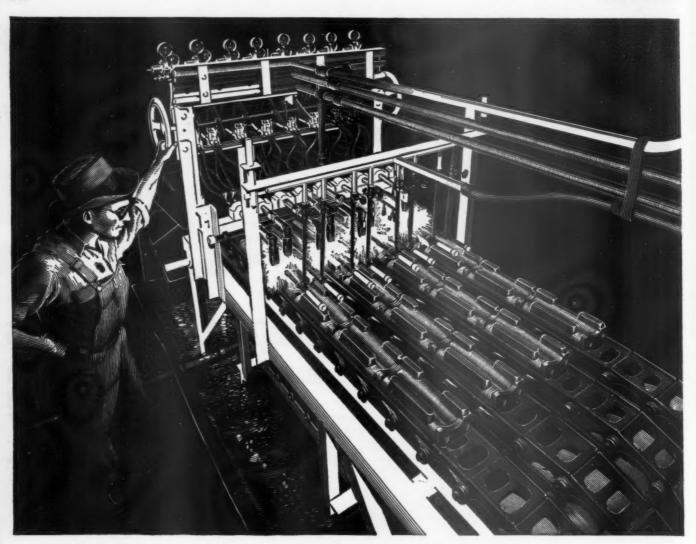
SNAP-ON TOOLS CORPORATION

8048-L 28th Avenue

Kenosha, Wisconsin



THE CHOICE OF BETTER MECHANICS



Making Tank "Shoes" Last Longer

Tank treads are subject to the severest form of abuse and, therefore, require protection against wear.

Recently Trinler, Inc. of Chattanooga, Tenn. received a large rush order for tank treads. The problem here was to find a machine that could flame harden these treads rapidly enough to keep pace with the production schedule that had been set by the govern-

ment. This is where Air Reduction Field Engineering was called in.

From this team work of Trinler and Air Reduction engineers—each contributing their specialized knowledge towards one common objective—was born a special flame hardening machine designed especially for the job on hand. This machine flame hardens four tread links simultaneously and easily keeps pace with other production operations.

This is but one of many ingenious oxyacetylene flame applications in which Air Reduction research and engineering have played an important part. Whether it be for maintenance or production, Air Reduction will gladly assist you in the application of oxyacetylene flame and electric arc processes.

* BUY UNITED STATES WAR BONDS *



AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N. Y.

In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO. - General Offices: HOUSTON, TEXAS



by CARDOX Fire Extinguishing Systems

More war goods from fewer man-hours is one of America's most urgent needs today! Every hour saved here is another step toward victory.

One major fire—or a small fire that results in crippling damage by the extinguishing medium—can cut the flow of vital war goods to a trickle over night. Such fires may halt or slow down production on a dozen essential fighting tools . . . waste precious man-hours and critical materials.

Cardox Fire Extinguishing Systems provide distinctive advantages in protecting production against these warprolonging fires. They smother the fire and "cool out" combustibles through timed mass discharges of pounds or tons of CO₂... with no damage by the extinguishing medium. Consequently, when fire strikes, men and machines are usually back in production quickly. Losses of vital materials are reduced to a minimum.

Industries guarding War-Winning Production with engineered Cardox Fire Extinguishing Systems include leading manufacturers of Airplanes, Airplane Parts, Armor Plate, Aviation Carburetors, Aviation Engines, Cold Strip Steel, Electric Power, Engine Parts, Forgings, Motor Fuel Plastics, Processed Fabric, Rubber Products, Solvents, Tanks, Tank Engines.

Today, the facilities of Cardox are concentrated on two activities: (1) Providing fire protection for War-Winning Production; (2) Applying the technological knowledge gained here to help industrial, municipal, state and national fire fighting organizations perfect plans to increase the efficiency of fire protection both today and after the war.

If more information would help—in solving your fire protection problems of today or tomorrow—write on your company letterhead for Bulletin 25113.

CARDOX CORPORATION BELL BUILDING • CHICAGO 1, ILLINOIS

District Offices in New York • Washington

Detroit • Cleveland • Atlanta • Pittsburgh

San Francisco • Los Angeles • Seattle

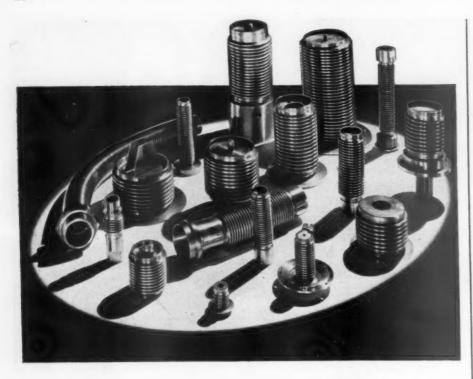
How Cardox Systems Protect War Industries

- Timed discharges, as needed, through built-in piping systems . . . supplied instantly from a single storage unit holding tons (if required) of liquid Cardox CO₂.
- Mass discharge of Cardox CO₂ "knocks out" fire, by . . .
- Reducing oxygen content of the atmosphere below the concentration necessary for combustion, and . . .
- Cooling combustibles and fire zone below ignition temperature . . .
- Extinguishing fire quickly and completely without damage from extinguishing medium.

CARDOX—CO₂ Systems with Enhanced Fire Extinguishing Performance

- A.Uniformity of CO2 characteristics.
- 8. Extinguishing medium with uniformly greater cooling effect.
- C. Accurate projection of CO₂ through greater distances.
- D. Timed discharges, as needed, through built-in piping systems . . . supplied quickly from a single tank holding tons of liquid Cardox CO₂.





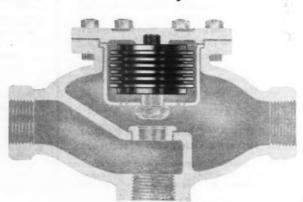
CMH Stainless Steel

Bellows

Wherever stainless steel's corrosion resistant qualities and temperature values are required in bellows service, CMH unimetal circular seam welded assemblies are filling that need.

No Solder or Flux Required

Long lengths of CMH Bellows are standard production; strength is further enhanced with multiple ply assemblies when needed.



Ask for engineering recommendations on specific applications.

CHICAGO METAL HOSE CORPORATION

General Offices: MAYWOOD, ILLINOIS
Factories: Maywood and Elgin, Illinois

(Continued from page 260)

of the quota and purchases against it, but these items must be excluded from the computation of the quota and the charges against the quota.

The Direction requires that MRO quotas must be computed, and that records of the computation and supporting work sheets must be kept for at least two years after the last purchase of MRO items under the Regulation. Persons purchasing under the regulation must also maintain a record of expenditures for MRO items for not less than two years.

PROCEDURE FOR PURCHASING CLASS A PRODUCTS

A procedure to be followed by persons desiring to purchase Class A facilities from manufacturers where an allotment of controlled materials is needed but may not be obtained under procedures outlined in CMP Regulation No. 6, dealing with construction and facilities, has been established by the War Production Board with the issuance of Direction No. 34 to CMP Regulation No. 1.

The procedure applies to applications for priorities assistance to purchase Class A products which are machinery or equipment generally carried as capital items on manufacturers' books.

In most cases applications for such priorities assistance will be filed on Form WPB 541 (formerly PD-1A), but in certain cases, special forms applicable to special items of equipment will be used. The form should be filed with the War Production Board, Washington, D. C. Before the application is filed, the applicant should have the manufacturer from whom the facility is to be purchased fill out and sign a Form CMP-4A, application for an allotment of the controlled materials necessary to manufacture the facility. This form, together with one copy should be filed with the application for priorities assistance.

When such applications are approved, the War Production Board will (1) assign a rating for the purchase of the facility and (2) make an allotment of the controlled materials necessary for its manufacture. The allotment will be sent to the purchaser of the facility on Form CMPL-150, and he in turn, must make an allotment to the manufacturer on Form CMPL-150A. The purchaser will use the preference rating assigned on Form CMPL-150 in placing the order. The letter transmitting the CMPL-150 will explain how the person wishing to buy the facility places his order and handles the allotment.

The manufacturer may then use the allotment and extend the preference rating to purchase controlled materials, Class A and Class B products, and other materials which he will require as production materials for the manufacture of the facility. The manufacturer must accept the order for the facility or reject it in conformity with Paragraph (p) of CMP Regulation No. 1. If he is compelled to reject the order, the purchaser

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NEED THESE?

(OR SIMILAR EQUIPMENT)





Anti-Friction Bearings



Igw Clutches





Shaft Collars



Manufacturing reliable power transmission equipment has been our business for more than 65 years and you will find Link-Belt still serving industry faithfully and well wherever power is being transmitted. The line is complete and stocks are maintained at all Link-Belt warehouses and many distributors.

Check your power transmission equipment now and place orders for parts likely to require early replacements.

Send for copy of Link-Belt Standard Equipment Catalog No. 850. Address nearest office.

LINK-BELT COMPANY

Engineers and Manufacturers of Power Transmission Machinery Since 1875 Chicago 8 & 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, Pittsburgh 19, Cleveland 13, Detroit 4, San Francisco 24, Toronto 8.



Ordnance Plant

















POWER TRANSMISSION EQUIPMENT

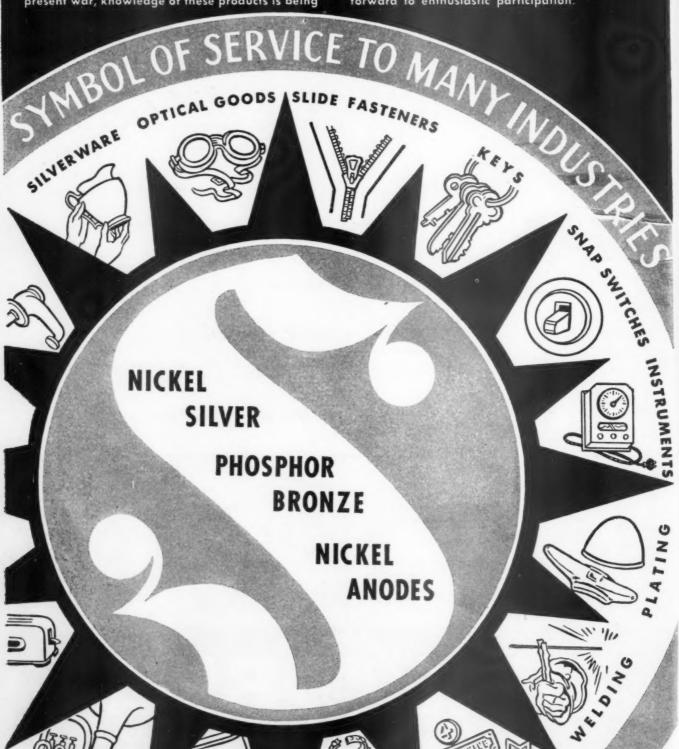
THE SEYMOUR MANUFACTURING CO.

SEYMOUR, CONNECTICUT

Nonferrous Alloys Since 1878

In the 65 years that "Seymour" has been making nonferrous alloys, service has spread to every metal working industry. In this period, three wars have drawn heavily upon, and materially developed the uses for, "Seymour" products. In the present war, knowledge of these products is being gained that should have a far-reaching postwar value; for no previous war or peace has exacted the ingenuity that is fast becoming plant routine!

Peace will come — and with it need for large scale rehabilitation . . . in which "Seymour" looks forward to enthusiastic participation.



LATING



N·B·M SILVER BABBITT Relieves The Shortage of Tin-Base Babbitts

he Battelle Memorial Institute has authorized us to use their process for producing lead-base Babbitts with silver content.

Although conceived to replace tin-base Babbitts,

NBM SILVER is by no means a mere "substitute"

It has relatively the same physical characteristics:

Retains hardness at high temperatures • Easy to handle and to bond • Resists squeezing-out at operating temperatures • Corrosion resistant.

Write for our new bulletin and engineering briefs.



NATIONAL BEARING

METALS CORPORATION

ST. LOUIS - NEW YORK

Brake Shoe

PLANTS IN: ST. LOUIS, MO. . PITTSBURGH, PA. . MEADVILLE, PA. . JERSEY CITY, N. J. . PORTSMOUTH, VA. . ST. PAUL, MINN. . CHICAGO, ILL.



3-M ABRASIVE BELTS
and Segment Face
Contact Wheels

SWING GRINDER

FLOOR MODEL BACKSTAND IDLER



BENCH MODEL
BACKSTAND IDLER

. . . these two units are the "working heart" of the swing grinder and backstand idler. The perfect balance of Segment Face Contact Wheels and their ability to conform to curved and irregular surfaces . . . the combination of fast cutting with smooth operation and long life offered by 3-M Abrasive Belts . . . these have helped swing grinders and backstand idlers give outstanding results in the finishing of metal surfaces. 3-M Abrasive Belts are tough enough to stand up under the powerful drive of a swing grinder; tough enough to cut down welds and condition the surface of bars. sheets, billets and tubes in double-quick time. They are uniform enough to give the finest precision parts a smooth, even finish quickly and easily. Complete information on these aids to faster, better product finishing is yours, without cost or obligation, in exchange for your name on the coupon below.

MINNESOTA MINING & MFG. CO., • St. Paul 6, Minnesota

Gentlemen: Please have a 3-M Methods Engineer call.

Send us a copy of your booklet "3-M Method of Polishing and

Finishing."

Name
Company
Address
City
Zone
State



(Continued from page 264)

may then place an order for the facility with any other manufacturer he may choose. An allotment of controlled materials may be made to the manufacturer who accepts the order without any further approval of WPB.

If a producer needs an allotment of controlled materials for a Class A facility which he its going to manufacture himself and he may not obtain the allotment under CMP Regulation No. 6, he may follow the same procedure and use the allotment and preference rating which he receives to obtain any products or materials required to manufacture the item.

LIMITATION ORDER L-234 REVOKED

Limitation Order L-234, issued December 24, 1942, which provided for scheduling operation for industrial type instruments, has been revoked because these instruments are now classified under General Scheduling Order M-293. Types of industrial instruments affected include pyrometers, tube system temperature instruments, liquid level instruments, industrial thermometers, pressure gages, flow instruments, combustion control equipment, control valves and regulators, the Radio and Radar Division of WPB announced.

PLASTICS DISCUSSED AT WASHINGTON

(Continued from page 178)

daily use of plastics and will expect and recognize them in the goods he buys as a civilian."

"Under his steel helmet, he wears a tough, strong liner of molded reinforced plastics. His uniform buttons and in many cases his insignia are of non-reflecting molded plastics. The flotation bag which he uses to cross streams and rivers is of plastic coated fabric. In case of gas attack, he can cover completely in ten seconds with a plastics protection against skin-irritating gases. His gas mask, too, has plastic eye pieces, valves and connections."

"At his hip he carries a plastic canteen. His first aid kit, carrying bandages and sulfa drugs, is of plastic. If he should happen to be the bugler, he carries a light-weight, olive-drab plastic bugle. In desert fighting, wide transparent, plastic eye shields protect him from the sand. His ammunition is packed and protected by plastic impregnated waterproof cartons—protected still further by plastic sealed wrappings of paper and foil. His communications equipment, his compass—all these things which are so vital to his safety and his success—involve the use of plastics in their manufacture."

Looking to the postwar era, Mr. Turnbull told the group of Governmental, institutional, industrial and public utilities buyers composing the local Purchasing Association, that the postwar outlook for the plastics industry involved "sizeable"

(Continued on page 270)

✓ Looking ahead with Asbestos ✓



"We're seeing that every heat unit stays right on its wartime job in this refinery! 100 octane aviation gasoline is precious these days. That's why you find K&M Insulation our standard safeguard against heat loss."

Many an aviation gasoline refining plant is following that sound and effective practice. K&M 85% Magnesia Insulation is in service on hot process lines, steam lines, bubble towers, heat exchangers and reboilers, preheated air ducts and other vital places.

The remarkable efficiency of K&M 85% Magnesia in preventing heat loss—and so con-

serving power and saving fuel—has won it a high place in the opinion of engineers everywhere, throughout wartime industry.

In fact, K&M output of heat insulation has increased to a new all-time high. And the research that goes hand-in-hand with our production will make it possible for K&M to put this war-born capacity to the best of use in the "V" years to come.

Nature made asbestos;

Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

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asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains



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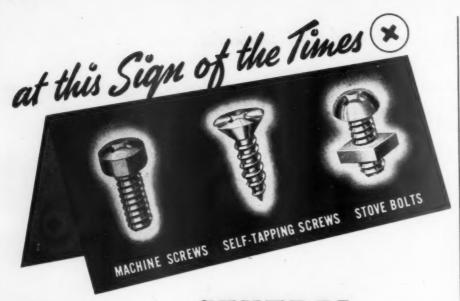
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Remember ... CENTRAL offers PHILLIPS Recessed Head Screws ...

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 - Self-Tapping Screws



You can depend on Central





Three grades of diamonds. Common quality \$12 per karat. Medium quality \$24 per karat. Select quality \$48 per karat. (Contour template diamonds supplied only in Medium and Select quality.)

All diamond sizes ½ to 10 karat are nib mounted for immediate shipment . . . Billed subject to approval. Specify quality of diamond wanted. We recommend a minimum size of one karat for each 6" diameter of grinding wheel. (24 hour resetting service, \$1.00 post paid.)

Grinders instruction card free.

The Most Complete and Up-to-the-Minute Line of Diamond Tools for Wer Production. Send for Free Catalog.

DIAMOND TOOL COMPANY, Not Inc. Sheldon M. Booth, Pres. 938 E. 41st Street CHICAGO, ILL. (Continued from page 268)

expansion of plant facilities." He said "the industry firmly believes it will be able to employ more men than ever before."

"We do not look for a slump in our employment figures. In fact, it is likely that as soon as equipment becomes freely available we will be able to use the services of a substantially increased group of employees."

Naming the automotive industry as the largest customer for plastics, Mr. Turnbull revealed that the plastics industry "looks forward, in the first years of full production, to a six million car year—the highest on record."

He said also that governmental and industrial procurement officers had, in the past two years, become more familiar with an increasing variety of goods which the plastic industry produces—and that this trend will continue into the peacetime years. He also displayed a very inter-

esting exhibit of wartime plastic products. Clifton E. Mack, Director of Treasury Procurement and the association's president, said that Mr. Turnbull was the second of a series of speakers being invited each month to discuss coming problems which involve the purchasing science.

This meeting was one of the most interesting of any held by the local association. Among the guests were Albert F. Hayes, Chief of the Leather Section, War Production Board, and past president of the National Association of Purchasing Agents; Vincent de Goubeau, past president of the New England Association of Purchasing Agents and formerly Purchasing Agent of the United Fruit Company, Mr. Clinton Rector, Chief of Thermosetting Unit, Plastics Section, Chemical Division, War Production Board.

Course on Purchasing

The applications of two new members were approved, namely, Edward J. Fitzgerald of the Navy Department and formerly Purchasing Agent of the Robert Gair Paper Board Company of Havenhill, Massachusetts, and formerly a director in the New England Association of Purchasing Agents; and Clyde Matthews of the Federal Procurement Division, formerly Purchasing Agent of a large wholesale organization in California.

The Education Committee reported that it is receiving some encouragement from two of the local universities in regard to including the subject of purchasing in their course on business administration, and that the committee is considering the preparation of a handbook on purchasing for recommendation to the Educational Committee of the National Association.

The new Chairman of the Membership committee, Curran Ridout, of Treasury Procurement, outlined the proposed objectives of his committee in obtaining new members.

The Program, Publicity and Entertainment Committee Chairman surprised the members by having a birthday cake with

(Continued on page 272)



and rings, or any welded fabricated product, whether whole or partially heat treated. Our hot and cold methods enable us to handle any type of material

from mild carbon steel to the highest alloy. We are particularly well equipped to handle seamless tubing work, and have our own system for the elimination

of wall variations and eccentricities.

Cleveland Welding experience in the above type of work covers more than

25 years. Get in touch with us now and let's talk over postwar problems and see if our facilities can meet your requirements.



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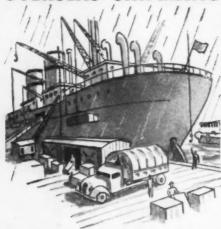
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OF INTEREST TO EVERY EXPORT SHIPPER is this newly perfected water-resistant tape. Its objective - to seal the new waterproof moisture-resistant containers specified for overseas shipments.

SOLSEAL Tape is available in 30/30/30, and 60/30/30. Also available string-filled. Multiple tests have proven that the tape adheres to the container for over nine weeks after immersion. Under conditions of high humidity, rain and actual immersion this tape answers a real need. Write for free sample coil with solvent for testing purposes.

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OFFICES: NEW YORK . CHICAGO . LOS ANGELES SOLSEAL Tape is manufactured by the

following companies:

Atlantic Gummed Paper Corp., Brooklyn, N. Y.; The Brown-Bridge Mills, Inc., Troy, Ohio; Central Paper Company, Menasha, Wis.; Edge-water Paper Company, Menasha, Wis.; Mc-Laurin-Jones Co., Brookfield, Mass.; Mid-States Gummed Paper Co., Chicago, III.; Nashua Gummed & Coated Paper Co., Nashua, N. H.; Rexford Paper Co., Milwaukee, Wis.; The Gummed Products Company, Troy, Ohio; Thomas Stationery Mfg. Co., Springfield, Ohio.



(Continued from page 270)

one candle brought in during the dinner, at which time he commented upon the growth of the association since its organization a year ago and the aim to make the association one of the most aggressive purchasing organizations affiliated with the National Association of Purchasing Agents.

President Clifton E. Mack invited the attention of members to the proposed hearing to be held by Senator James E. Senatorial Committee "Termination of War Contracts."

FORUM ON PURCHASING **PRINCIPLES**

(Continued from page 186)

of the purchasing executive. He cited the case of a large company with several branch plants and local purchasing divisions, who when the time came to appoint a chief Purchasing executive, found that there was no one in the branch departments that could assume the responsibility. A likely candidate for the position who had long experience in procurement with another company was not queried as to his knowledge of purchasing, but was asked: "If you are appointed purchasing agent, what would you consider your most immediate and pressing job?" He declared that his first job would be to sell himself to the other department heads of the company. He was given the job and has been highly successful in the conduct of the department. "We are a group of average fellows in our work", said Mr. Heinritz, "but we can never get anywhere until we have sold the top management, the men in the shop, the vendors with whom we deal, and others, that the Purchasing Department is doing a job for them"

In the course of the discussion, comment turned to the subject of salesmen. It was the consensus that salesmen were entitled to and should receive courteous consideration, but a hard and fast rule should be adhered to that a salesman's first point of contact with a company should be with the Purchasing Department, and that in event it seemed desirable that he talk with department head or someone in the plant, that the contact should be made through the Purchasing Department.

Controls During Transition

In his talk on "Controls During the Transition Period", Dr. Luedicke in defining the transition period as the period which will have to transpire before the reconversion of business from a wartime to a peace time basis has been complete said in part:

"This is not so much the period which will follow the final end of the war but rather the time that probably will elapse between the fall of Germany and the collapse of Japan. Actually, the conditions that will prevail in this period have already started.

"If you follow your WPB orders care-

(Continued on page 274)



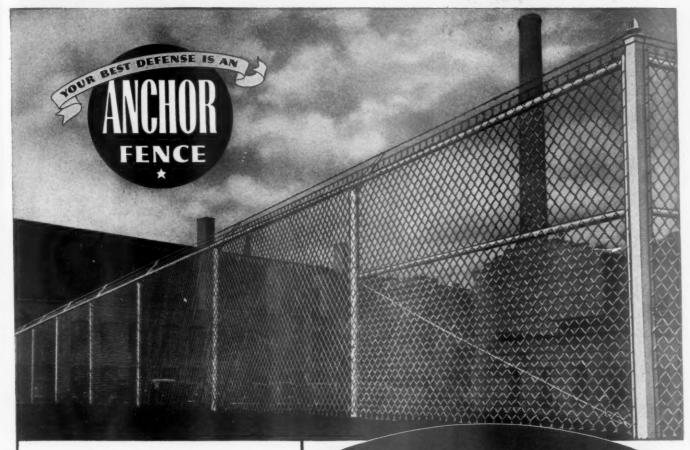
Hack Saw Blades includes a blade for any type of metal sawing. For high-speed cutting, the "Moly" Type* - the original molybdenum alloy blade - is recommended. It can be recognized by its gold finish with the name VICTOR in black. For light material and awkward sawing jobs your choice should be the VICTOR Unbreakable Special Flexible Blade. This all-over black blade cuts like an all-hard. Its flexibility eliminates breakage and tooth strippage.

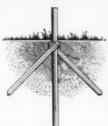
VICTOR has just issued a new catalog covering the complete line of Hack Saw Blades, Frames, Power Saws, Band and Contour Saws.



*T. M. Reg. Blades bearing the name "Moly" are made only by Victor Saw Works, Inc. and affiliated companies.







"Drive-Anchers"... driven deep into sub-soil, hold posts permanently erect. The angle-shaped "Anchors" extend at right angles to the fence-line, are clamped to posts to form a three-point "tree-root" anchorage. Strain severe enough to bend posts will not shift anchorage below the ground.

Anchor Square Frame Gates . . . built of strong, 2" square steel tubing, inseparably butt-welded at all corners, provide amazing rigidity, freedom from sagging and warping. Fabric is firmly held by rounded steel tension rods. Made in both single and double types, for any size opening.





Anchor "Clamp-On" Hinges permit 180° swing of gate. Can be adjusted to open either in or out. Swing freely without sagging and look more attractive, even after years of service. Clamp to the gate. No holes to weaken the gate structure or to admit moisture.

Copper-Bearing Steel Wire, galvanized after weaving, armored throughout by thick zinc coating, 4 to 5 times as heavy as that applied to ordinary commercial wire—explains why Anchor fabric lasts years longer than other fencing.



Here's Why War Plants Choose ANCHOR FENCE For Tough Protection Jobs

T takes a real fence to solve the problems of war plant protection. And from Maine to California, manufacturers have picked Anchor because on every count Anchor does the job better! Anchor Fence can be quickly erected in any soil, in any weather, even when the ground is frozen. The exclusive, patented "Drive Anchors" (illustrated at left) hold the fence permanently erect and in line, resist terrific force, yet can be speedily moved without loss in case of plant expansion.

Anchor Fences are now available only under priority regulations to war manufacturers who need protection fast. But when peace comes, Anchor's exclusive features will again set the standard on all industrial fencing operations.

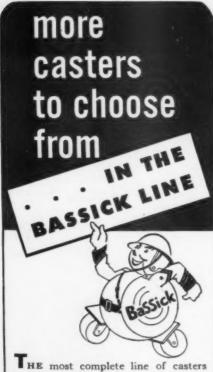
Meanwhile, Anchor continues to give the best wartime fencing service available. Anchor's nation-wide organization is ready to help you on any fencing problem . . . moving, repairing, painting, re-aligning every type of fence. Consult the classified section of your phone book or write for address of your nearest Anchor representative. There is no obligation, of course.

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— on Any Fencing Problem * call Anchor!



THE most complete line of casters bears the Bassick trademark. From tea tables to ten-ton trucks...you'll find the right caster—for factory, store, office or institution—among the scores of Bassick types and sizes.

Representative casters are shown below. For information on Bassick "specialties"...including "Floating Hub" (shock-absorbing) Casters, Grooved Wheel Casters (for angle floor track), Positive Position Locks (for portable equipment)... write for free folders.



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Bassick Heavy-Duty Casters. Handles loads up to 1500 lbs. each.

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MAKING MORE KINDS OF CASTERS ... MAKING CASTERS DO MORE

THE BASSICK COMPANY

BRIDGEPORT, CONN Division of Stewart Warner Corp., Chicago, III Canadian Factory, Stewart Warner Alemite (Continued from page 272)

fully you know that during the past few months there has been a marked increase in priority orders which constitute the relaxation of existing controls."

He declared that though it is obvious that the military services must come first, it is difficult to see why at this stage of the war the total amount of materials needed for war purposes still has to be increased.

"Indications are mounting that the situation is easing even for those materials which used to be most critical", he continued. "The alloy steel problem has been licked. Only molybdenum is now regarded as a serious problem. Steel production will be at the rate of 93- to 94,000,000 tons annually by the end of this year which means that the amount available quarterly in 1944 will be about one million tons larger than this year. In aluminum we are actually piling up a substantial reserve. The same is true of magnesium. Among the major metals only copper remains a serious problem. Today there are definite indications that the problem in rubber remains merely one of processing facilities for the synthetic product.

"The change over from a sellers' market back to a buyers' market is still a long way off", he said. "You still will have to be polite to your suppliers for some time to come."

"The question is how fast the transition in materials supplies will proceed from here on and which factors will determine it. The most important single factor in this picture is the way in which the war will come to an end. The experts now seem to be agreed that Germany will collapse first, and that it will then take us another year to clean up Japan. When the collapse in Germany will come is difficult to say, but when it comes it will come with astonishing suddenness.

"It is hardly likely that a really drastic cut back in war orders will be evidenced before the collapse of Germany is official. Even then, it will of course be no sudden switch from "guns" to "butter", since we would still have to lick the Japs. However, we would then be back in a "guns and butter" period which in many cases might resemble the period immediately preceding our entry into the war.

"During this period the supply of all basic raw materials for civilian purposes will be increased sharply, but it still will not be sufficient to satisfy all remaining military and all essential and unessential civilian needs.

"Therefore, controls will have to be continued for some time in order to secure adequate distribution of those supplies which can be made available for

civilian economy.

"There will be no repetition of the price boom that followed the first World War because this time price controls will not be prematurely lifted. With each month the war is prolonged, the immediate postwar demand for consumer goods will be intensified. Every business man knows

(Continued on page 276)

Specify TANNATE LEATHER BELTING ... to keep machines producing at full speed



For primary drives — for modern group drives — for pivoted motor base drives—for machines — specify Tannate. Tannate grips tightly, runs smoothly. Is stronger than most first-quality oak belting. Outlasts ordinary belts and keeps production flowing with fewer shut downs even when running on 3 shift daily operation. And it is economical.



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for Your Screw Driving Army

NO PRACTICE NEEDED TO DRIVE PHILLIPS SCREWS ...

It's no problem to replace men who have left your screw driving army for the fighting front, if you use Phillips Recessed Head Screws. Anybody can "take over", without training, and do a good job!

The scientifically designed Phillips Recess makes screw driving fool-proof. It automatically centers the driving force and eliminates all driving troubles . . . fumbling, wobbly starts . . . slant-driven screws . . . burred and broken screw heads and dangerous screw driver skids.

Screw and driver "become one unit" making such efficient use of turning power that driving is much easier and faster, regardless of driving method. And, power driving is made practical.

Compare the cost of driving Phillips and slotted head screws. You'll find that it actually costs less to have the advantages of the Phillips Recess!

KEY TO FASTENING SPEED AND ECONOMY

The Phillips Recessed Head was scientifically engineered to

Fast Starting - Driver point automatically centers in the recess ... fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

Faster Driving - Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

Easier Driving - Turning power is fully utilized by automatic centering of driver in screw head. Workers maintain speed without tiring.

Better fastenings - Screws are set-up uniformly tight, without burring or breaking heads. A stronger, nearer job results.



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PHILLIPS Recessed SCREWS

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Pheell Manufacturing Co., Chloago, III.
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Scevill Manufacturing Co., Waterville, Conn.
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The Southington Hardware Mig. Co., Seuthington, Conn.
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No



Freedom is not given a people by a benevolent Government it is something we must work to get and work to keep. Freedom of Enterprise has made America the world's most powerful and prosperous nation in both peace and war. Here we have the highest wages paid in the world, here we have developed the highest standard of living. Here we have not been subject to the repressions of a state-controlled economy, but have been free to develop individualism and self-reliance. Let's keep it that way.

the Best Postwar Plan

We believe our returning soldiers will prefer a job with private industry where the "Sky Is the Limit" for their advancementin direct proportion to their individual initiative, skill, and ability. Our system of Free Enterprise makes this possible, for it creates the vast volume of American production so necessary to attain and maintain high levels of employment.

In planning for the future, what can be more vital than to combat many plans that seek to abandon the system that has made this possible-Free Enterprise. Continuance of Free Enterprise, plus native American industrial skill and ability, will avoid the gaunt spectre of mass unemployment after the War.

But-unless we are willing to trade the time-proven Free Enterprise system for some substitute which will nullify individual initiative, progress, and freedom, we must speak up. We must explain its principles and advantages to those who may not understand them, because appreciation comes only from knowledge and understanding. If we fail to do this, the failure will be ours.

CURTIS-



CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

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St. Louis, Mo. Air Compressors . Air Hoists . Air Cylinders (Continued from page 274)

that, as far as his company is concerned, speed will be of the essence in order to profit as much as possible from the first rush of demand after the termination of the war. If left uncontrolled this would inevitably lead to a mad scramble for materials, and this scramble would take on such proportions that no price ceiling could be expected to hold under the impact. In other words, we would experience a black market which would make anything we have seen along these lines so far look like a Sunday school picnic.

"Hence there cannot be the slightest doubt that during the transition period both price and distribution controls will have to be continued. No administration can take a chance on (1) permitting the most profitable uses of a commodity to compete without restrictions with the most essential uses; (2) permitting highpriced merchandise with more favorable profit margins to push low-priced merchandise from production schedules; or (3) permitting financially strong, large companies to outbid small companies in the search for materials.

Price-Distribution Coordination

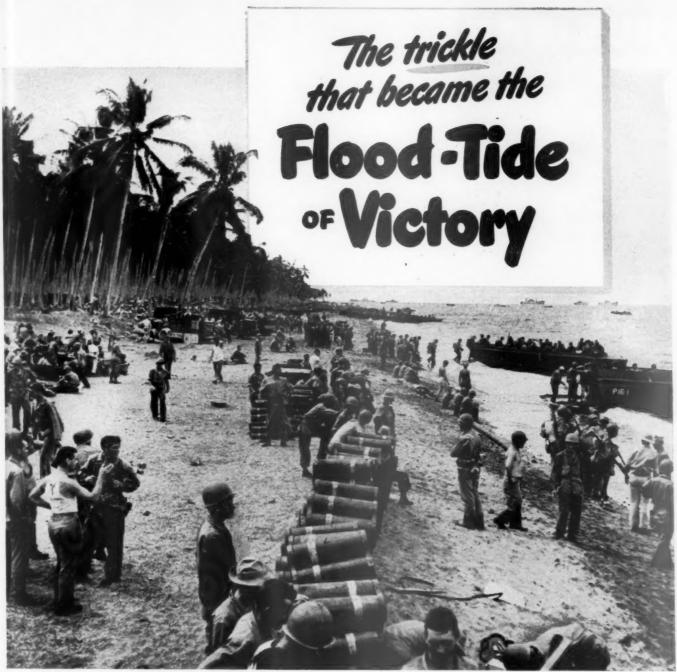
"This means that there will have to be very close coordination of price and distribution controls after the war. Chances for such cooperation hinge largely on trends and policies within the Office of Price Administration. I feel reasonably encouraged about what is going on in OPA. The new top policy makers in OPA at least have a clear conception of what the functions of this agency must be -now and in the post-war transition period. They realize that price control must be primarily "functional" in character. That means that OPA must implement the work of those war agencies which are primarly concerned with pro-

"There is hardly anybody today in Washington who has done more to make Washington, and especially OPA, production-conscious than Mr. Arthur D. White-side, WPB Vice Chairman, Office of Civilian Requirements. We should not overlook the fact that he has a counterplayer in Mr. Brownlee in the OPA who is now in charge of all price divisions. As long as this team remains in action-and that will be only as long as they see a chance for execution of sound policiesthere is reason to feel assured that things in Washington will run more smoothly than heretofore.

"There is good chance that neither WPB or OPA will be around in their current forms for long, once the reconversion job starts in earnest. Watch for the present Office of Civilian Requirements to form the nucleus of the top agency for the transition period. OPA will function as a subsidiary to such a post-war agency, and may even lose its identity completely. The SWPC will hardly play more than a secondary role in this set-up.

"Business will be asked to cooperate in the transition period much more ac-

(Continued on page 278)



International News Photo

AMERICA'S great automotive industry has made good its pledge to become the Arsenal of Democracy. The production of ar nament for the United Nations has in two scant years swelled from a "trickle" to a gigantic flood which will eventually engulf the Axis.

Almost overnight passenger cars and trucks took on startling new forms—jeeps and beeps, combat cars and tanks, aircraft and anti-tank cannon. Special production skill was put to use,

whatever the demand, from mess kits to gyro-compasses, from helmets to Oerlikon gun feeds, from map cases to bombsights. A thousand products as foreign to the automotive field as a rowboat to the Sahara proved the flexibility of mass production.

Only the future can reveal the true brilliance of this page of history. It may well be as decisive an event as any battle ever fought.

Auto-Lite is proud to have a part in so great an accomplishment.

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AUTO-LITE

In its 26 great manufacturing divisions, Auto-Lite is producing a long list of items for America's Armed Forces on land, sea and in the air

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O'NEIL-IRWIN

This correct distribution of strength and weight gives you a longer wearing cutting edge, a stronger, stiffer frog and socket, permits a deep hang and better working balance.

Available for Essential Needs

THE UNION FORK & HOE CO. 692 Hocking Street, Columbus 15, Ohio

Industrial Shovels, Forks, Rakes
— Sold by Leading Distributors

(Continued from page 276)

tively through Advisory committees than up to now. Each industry will have only one advisory council which will advise on price as well as distribution of materials. There is a growing feeling in OPA that at present too much emphasis is being placed on price regulations and not enough on materials allocations. It is not likely that we will slip back into the type of priority controls used in the period preceding the outbreak of war.

"However, there is now reason to believe that the WPB, or whatever agency will then be in control of allocations will avoid the pitfalls of a reversal to that system. It is much more likely that enduse controls will be maintained on the basis of direct allocations until such time as the restrictions on the use of any particular commodity can be entirely lifted. These allocations will not be handled entirely on the basis of applications, but rather on a quota basis for individual companies.

"One factor which probably will bear

close watching in the post war period is the relationship between actual market and established ceiling prices. In a recent instance where the government curtailed its purchase of a certain item and WPB eliminated restrictions on the civilian uses, prices immediately dropped 25% below the established ceiling. It may well turn out that the relationship between ceiling and actual prices will become one of the barometers of when allocation restrictions in the post-war period can be lifted in individual instances.

"Summing up, there can be no doubt that some controls will be with us for a considerable time to come, that the process of transition probably will be a gradual one, that during this period both price and allocation controls will have to be continued, and that probably the development of below ceiling prices will be the signal for the restoration of unrestricted markets in the post-war period. That, of course will mean the beginning of a long series of new headaches for Purchasing Agents and economists.

WAR DEPARTMENT CONFERENCE

(Continued from page 84)

ment agency on the basis of the simplest sort of security, such as the assignment of the producers termination receivable.

"All of these methods of financing are now receiving careful study by the War Department. It is probable that no one method will provide a complete answer and we may find it necessary to use a number of different methods in order to achieve complete coverage of the problem."

In conclusion, he stated:

"Let me conclude by reminding you of three important points: In the first place we will continue to need the active help and suggestions from management and labor. We must learn all that we can from the practical experience of current terminations in order to make the final task as simple as is humanly possible.

"In the second place, you must set up termination departments in vour own organizations. These departments must be manned by men who are fully familiar with termination procedures and these groups must include responsible officers of your company in whom you have confidence. This is necessary if we are to avoid a fatal waste of time when mass settlements become necessary.

"Finally, industry must itself be prepared to settle the enormous volume of subcontracts which will be terminated in connection with the cancellation of prime contracts.

The personnel of your termination departments must get their training in this difficult operation of making termination settlements of subcontracts."

FROM STOCKPILE TO SURPLUS

(Continued from page 85)

the taxpayer's dollar that is footing the bills. The pendulum is bound to swing back, in the future, from the unchecked spending of the war years. In fact, the temper of the Congress has already indicated a very decided trend in the reverse direction.

I do not feel that changes in Federal procurement, disposal of surplus property, or any other phase of Federal procedure, are brought about by writing articles. What is needed is something much more concrete than that. The great majority of Federal procurement officers are efficient. The writer has worked side by side with them under the pressure of this great wartime purchasing program. The great majority of these Federal procurement officers would welcome the changes advocated in these discussions, for greater flexibility in future policy and regulations regarding Government purchasing and disposal of surplus property. The point is how to bring this about.

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Possibly the National Association of Purchasing Agents, through

(Continued on page 280)



Like time, obsolescence never stops. And during war the pace of obsolescence increases. Idle or worn equipment, which only a few months ago seemed to have capital value, may now be properly classified for scrap.

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Never before has the need for industrial iron and steel scrap been so urgent. Lake shipments of iron ore are more than 8 million tons behind schedule. Scrap inventories have declined. We face a critical scrap shortage with serious loss of steel production this winter unless millions of tons of dormant scrap is made available to the hungry iron and steel furnaces.

Have your salvage foreman review with you his materials and equipment classifications and change to scrap every item which may reasonably be so considered. If there may be any advantage in taking these writedowns in values this year so much the better. Certainly there is no better time to "throw your scrap into the fight."

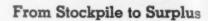
Pittsburgh Steel Company

GRANT BUILDING

Pittaburgh, Pennsylvania



No



(Continued from page 278)

their national directorate and future meetings, could make these subjects a part of their program. Maybe that portion of Federal procurement agents belonging to the National Association of Purchasing Agents could be formed into a committee to further this program, if they believe in it.

Most industrial Purchasing Agents have had some business contacts with the Government. In fact, during war time, there are very few that have not become involved in Government purchasing regulations in one way or another. They know the red tape involved in consummating their transactions. An indication from corporation Purchasing Agents individually, and through their various state purchasing associations, would be beneficial.

Keeping Subject Alive

Congressmen can be approached on this subject with the idea of effecting the greatest saving in the taxpayer's dollar. A national magazine such as Purchasing could keep this subject to the fore.

The impact of surplus property disposal will hit the manufacturer with particular severity. Many corporations have converted to - and are devoting their entire energy to - the manufacture of war products for the duration. It will be the natural desire of such manufacturers to get back into the type of production where their experience and their reputations have been earned. The automotive manufacturer will try to make automobiles, the electrical manufacturer will try to make the electrical products that have not been procurable during war time. They may have some inventory troubles of their own to contend with. On top of this, at the very time they are confronted with the big change from war production to the products of peace time, finding the market clogged with surplus goods released as an effect of the war would seriously disrupt what should be an orderly transition period. Manufacturers' associations. regional and national, should be giving considerable attention to this subject today.

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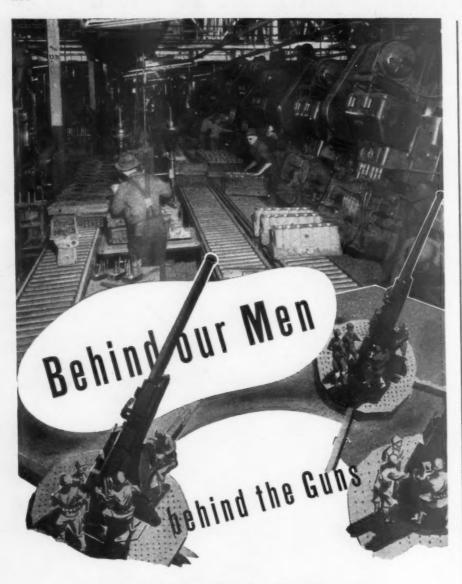
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We are facing a situation that is far reaching in its effects and in its implications regarding national policies. We can see it coming as the inevitable aftermath of the war. The time to do something about it is now.



BACK UP FIGHTING COURAGE with the deadliest guns, bombs, tanks and planes, and you've got America's formula for victory.

There's no surer way to shorten the war...
no surer way to save the lives of our fighting
men...no surer way to save our American
way of life.

Speeding up assembly...removing production bottlenecks...preventing hitches in the speeding movement of vital war materials is Mathews' contribution to America's war effort.

MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION





Now the Hun has real cause to call BRASS:

"DEVIL METAL"

I'T WAS a German scientist who christened brass: "Teufel Metall." And now his choice of names has come home to roost, with brazen claws, on the Wehrmacht. For Yankee brass is spitting an endless stream of shells and bullets from British, French, Russian, and U. S. guns . . . making it even hotter than the devil for Axis forces ashore, afloat, and aloft.

The first U. S. troops to fight in Africa sent back an unofficial citation to munitions industries here at home. They had expected a certain amount of trouble ... duds, rim-firing, outsize shells that would jam their guns. But they had no such trouble at all. Banged around, buried in sand, moored in cases to buoys for days...it didn't mean a thing to Yankee ammunition. Each hammer-fall paid off with a G. I. shot... on the nose ... right now!

All of which bespeaks conscientious teamwork on the home front. In this team, Bristol is doing everything conceivable to keep its part of the faith. Every inch of Bristol Brass sheet, rod, and wire goes to the munitions makers as completely 1-A as we can make it... rolled and drawn to uniform tolerances exceptional even for Bristol. For it is vital to us to know... as far as our own product is concerned... that every single time a gunner pulls his trigger on a shell of Bristol Brass, he has the best chance we can give him to score a direct hit.

BRISTOL BRASS

The Bristol Brass Corporation, Bristol, Conn.

\$\$\$ BUY WAR BONDS TO BUY BRASS FOR BULLETS

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Use B-H WEATHERSEAL to Protect Exposed Insulation

lation exposed to infiltration of water or moisture with B-H Weatherseal. This Baldwin-Hill product is an emulsified, asphalt compound furnished ready-mixed in plastic form. By reason of its exceptionally high coverage and low percentage of shrinkage, the per square foot cost is low. One hundred pounds will cover 55

square feet of surface 1/4 inch thick. After drying, dehydration reduces the thickness to 1/8 inch, giving a smooth, complete seal over the entire area. You simply trowel it on. Stays permanently black—no fading or spotting. Send for generous sample of B-H Weatherseal and see for yourself how easily and thoroughly it works.



Pattern For

(Continued from page 94) quirements of the department. This department has also adopted a new property accounting system which cuts the time of taking inventory about 85%, makes it easier to locate surplus property, and offers other advantages.

Conservation

And coming back to the Conservator's office, we find that short sheets of paper are being used for short letters, which also are sent out in small envelopes. Carbon paper is being used until legible copies are unobtainable — typists are instructed to alternate its use with bottoms up and to handle it carefully. Staples are used for filing instead of clips, rubber bands are treated with respect, and typewriter ribbons are reversed to assure full use top and bottom.

"Waste is Immoral"

All this and more too. It marks only the beginning, according to Conservator Brennan. "It is unfortunate that it takes a total war to make one conservation minded," he said, "but conservation of materials. supplies and equipment is not merely a war-time measure. It is just as important in peace time as in war. I suppose the American economy is responsible for the conditions of waste that we are now trying to correct. There has been too much waste in this land of plenty. The thrift of our forefathers is history. Comparatively few practice it unless forced to by scarcities, and that is the condition we now face. We must now consider that waste is immoral.

"The functions of a large city differ materially from those of a Federal department or division. We must consider public works, education, recreation, public safety, public health, and the many other factors that are involved in addition to administrative functions.

"Our program is now well started. The Advisory Committee, the Deputy Conservators, and the Conservator Aides are enthusiastic and serious in their efforts to make it a complete success. I am sure that when we make our first annual report to the Board of Commissioners, it will reflect outstanding achievement by every one of our municipal departments in the conservation of materials and the prevention of waste.

"This is not merely an experiment or an emergency movement for the 'duration'. It has long been

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For top performance when you cut steel with carbide tools * Cut at high speeds, in general, not less than .010" per revolution (for medium and heavy cuts), and preferably .015" to .025" * Fit correct chip breaker to each job (the groundin, step-type is usually best) * If you use a coolant, provide heavy, continuous stream * Keep tools sharp (excessively dull tools cause breakage) * Use rigid set-ups; with minimum overhang, and part chucked firmly. These factors

select. Today, more than 60% of all Carboloy Cemented Carbide produced for machining purposes is used for cutting steel. In leading war plants throughout the nation—you find Carboloy tools giving top performance on all types of steel cutting, ranging from extra heavy jobs to

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PATTERN FOR CONSERVATION

(Continued from page 282)

needed. As a people we have been extravagant and wasteful — individually and collectively. Our Board of Commissioners has taken the lead in ordering a program of civic economy that I am sure will be a perpetual feature of our local government."

Washington's Conservation Program finds its keynote in the awesome thought that as a nation we are not too rich to worry — not any more. We are face to face not only with critical shortages of so-termed strategic materials for the war effort and essential civilian economy, but with dire shortages in the more commonplace things such as paper and wood and many other formerly abundant materials used in the making of equipment and tools for the home, office, and factory.

Heretofore waste has been abundant everywhere though the opportunity for profitable salvage was obvious and the need for conservation apparent. One can only wonder why "something hasn't been done about it" before.

Savings Potentialities Enormous

Even the paper bags that the clerk in the dime store puts your purchase of screws in must be conserved. Hampers and other shippers used for foodstuffs must be saved. In home, office, store and factory, conservation is essential. The savings potentialities are stupendous in civil administration. Once that nebulous thing termed public opinion envisions the possibilities and concentrates on economy that is economy, things will change.

The conservation program in the District of Columbia is mandatory. The hundreds of public purchasing departments in states, counties. and cities are under no compulsion to follow suit. But they are watching the progress of this plan, and they can scarcely be unaware of its tremendous potentialities - first, in coping with the critical shortages of the present, and secondly, in the permanent benefits of economical supply administration. It is not difficult to conceive of the spirit of conservation, thus fostered, permeating every one of the political units. big and small, that go to make up these United States. The Washington program provides at once the pattern of organization and methods, and the convincing testimony and incentive of results.

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Contract Termination

(Continued from page 80)

reconversion costs may be a highly important consideration.

The Purchasing Agent facing the possibilities of contract termination will do well to bear this in mind, insofar as purchased materials and supplies are concerned, for it may have a profound effect on what constitutes sound purchasing practice. Extended inventories, even on those items where this might be permissible, become a hazard rather than production insurance and the comfortable cushion for varying demand. Special sizes, shapes, and analyses are particularly apt to become liabilities; and it is going to be harder to make a case for reimbursement on small tools, shop equipment and supplies, than on the materials which are actually incorporated in the product.

It is more than ever advisable to stick to commercial standards on all purchased items-standards applicable to the company's own operations if that is possible, but if that is impracticable, at least standards representing a fairly constant demand, which can be disposed of at something more than scrap value. Flexibility is the key to quick and economical conversion, and the reestablishment of the company in its own normal field of production. No amount of reconversion cost payments will take the place of such preparedness.

Suppliers' Rights

The third principle mentioned by Mr. Isham puts the spotlight once more on a factor that has already been stressed in these columns. Every order issued by the purchasing department constitutes an obligation for the buyer's company. It is placed with the full knowledge that the prime contract may be terminated and the need for those goods may disappear. But the obligation remains. Frequently, in view of the tremendous quantities involved in the war program, these outstanding commitments are many times greater than the working capital of the company, and might constitute a ruinous burden unless provision is made to get a release from the obligation as circumstances may require.

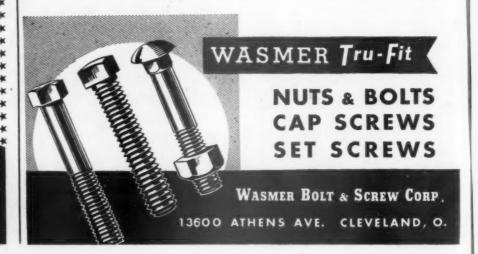
The time to make that provision is now. The way to do it is (1) study the contract under which your company is operating, with particular attention to the termination clause and the extent to which such commitments and cancellation costs are covered as reimbursable items of expense; (2) insert a termination clause in all purchase contracts, correlated equitably with the terms of vour own termination agreement.

Surplus Materials

Every contract cancellation creates a surplus. That surplus, and the losses growing out of it, can wipe out war pronfits effectively and instantaneously. The cumulative surplus when contracts are generally terminated will constitute one of the biggest problems that our industrial economy will be called upon to solve. The markets of the immediate postwar period will be largely conditioned by this one factor.

Get rid of surplus at once, and accept the loss. Right now, demand exceeds the supply, and there is a double advantage in getting this material quickly into the channels of production where it is needed and can be used. Get it into the excess lists or back into the hands of distributors as the case may be. Today it is needed to hasten the day of vic-

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IMPERIAL Tube-Working TOOLS

CUTTING

FLARING

BENDING

SOLDERING

SWEDGING

REFACING

Tool in Use	Size Tubing Serviced	Description of Tool	Cat. No.
	3/16" to 3/4"	Roller type. Has special groove for cutting off flares. Illustration at left	17/7
	1/8" to 3/4"	shows this tool in use	174-F 94-F
	7/16" to 1 1/8"	Wide range, roller type with flare	94-1
	7, 20 10 2 2, 0	removal groove.	212-F
	1/8" to 3/4"	Small, inexpensive, pocket size cut-	
		ter.	127-F
	1/8" to 2" 1 1/2" to 4"	Sawing vise.	184-F
	1 1/2" to 4"	Sawing vise.	185-F
	3/16" to 3/4"	Wide range type	175-F
	3/16" to 1/2"	For smaller range of diameters	93-F
	1/4" to 5/8"	Same as 93-F except size range	95-F
	3/16" to 1/2"	Has quick slip-on yoke	193-F
	3/4" to 1" 3/16" to 1/2"	For larger sizes	103-F
	3/10 to 1/2	For double-flaring steel tubing. Also general flaring. Illustration at left	
		shows this tool in use	93-FB
	1/4" to 5/8"	Spring bender set —outside type	101-F
	3/16" to 3/4"	Open-side bender. Positions any-	
		where. Calibrated in degrees. Each	
60		bender takes one size tubing. Illustra- tion at left shows this tool in use	364-F
	3/8" to 3/4"	Heavy duty bender outfit. Takes four	304-F
YYW	570 60 57 1	sizes of tubing	360-F
	For use on all	Outfit includes torch, 4 tips, solder-	
C. C.	soldering work	ing iron, hose, and tank connections.	
		Illustration at left shows this tool in	
		use	32
	1/4", 3/8",	Complete kit including flaring tool	
	1/2", 5/8"	bar and 4 swedging tools, packed in	
		steel case. Illustration at left shows	195-S
	1/4" to 3/4"	Individual swedging tools only, with-	
934		out bar.	
	1/4" to 5/8"	Refacing tool for refacing S.A.E. flare	
		fittings which have become nicked or	
	â .	marred. Includes cutter, 5 adapters. Illustration at left shows this tool in	
		use.	
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AO offers you a complete line of easy-to-wear protective goggles—a special design for every type of hazard. In addition, AO provides you with educational materials to help you launch your program effectively and carry it through to a successful conclusion. Write or call the nearest AO branch. Have a trained American Optical Company Safety Representative help you intensify your eye protection activities.



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The score is a goose-egg with the rim off. Somebody miscounted in Departments 18 and 19... because there was no means of maintaining an accurate count... and so Department 20 wound up the day with a shortage of parts that clogged up final assembly, disrupted today's shipping schedule, and tomorrow's production schedule. Nice going, with a war to win—toward which every minute of the day should be made to count to the utmost.

And every minute of the working day can be made to count to the utmost, if every production machine in

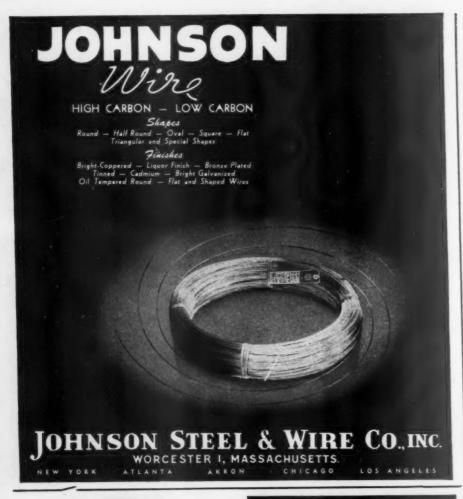
the plant is equipped with a Veeder-Root Counting Device that shows, as of the present moment, whether the machine is operating up to scheduled capacity, or whether it is in need of adjustment, repair, or regulation of power-flow. So shortages can be prevented, and interdepartmental co-ordination can be held constantly right on the button. See what Veeder-Root Control-by-Count can do to smooth out and speed up your war-production schedules. Write:

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DURANT MFG. CO.

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Contract Termination

(Continued from page 286)

tory. But when that day comes, it will be a drug on the market; depreciation, carrying charges, and inventory losses will take their toll. But by acting now, every pound of metal and every tool that is put to useful work, in your shop or in some other plant, will reduce by so much the accumulation of surplus when the war program itself is terminated. and will modify the impact of that unavoidable shock to manufacturing industry.

Contract termination must be faced in terms of materials as well as of money. The Purchasing Agent is in a position to make a tremendous contribution to his company and to the national economy from both angles.

Purchasing Steel

(Continued from page 120)

and control. There seems to be a general thought among producers and users of alloy steel that if such a scheme could be worked out it would be worth considerable time and effort to both the steel producer and to the user.

Applying the Tests

In order to pass on to our customers the advantage of hardenability information, we are now conducting Jominy Hardenability Tests on each heat of alloy steel as it comes from the producing mill.

From our tests, we prepare a chart showing the Jominy Hardenability results of the heat in the "as quenched" condition and also at draws of 1000° F., 1100° F., and 1200° F.

These Jominy Hardenability results are then interpreted for obtainable physical properties for bars 1" Rd., 2" Rd., 3" Rd. and 4" Rd., at the three draw temperatures indicated. These results are also put on the data sheets which are sent with each shipment of alloy steel from that particular heat.

This system furnishes the customer a quick, accurate picture of the heat-treatment response which can be secured from the alloy steel which he has bought. It is believed that this information will effect a considerable saving of time and ex-

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The difference between the two types of welding elbows shown above is in their dimensions. The "American Standard" elbow has a center-to-end dimension equal to one and one-half times the nominal pipe size. The Midwest "Long Tangent" elbow has tangents (straight ends) equal to one-fourth of the nominal pipe size; the center-to-end dimension is one and three-quarters times the nominal pipe size. Important among the advantages of the long tangents are: (1) pipe and fitting more quickly and accurately lined up, (2) weld removed from point of maximum bending stress, (3) less pipe required, (4)

short nipple and extra circumferential weld frequently eliminated, (5) slip-on welding flanges easily used, etc. There is no increase in price for Midwest "Long Tangent" Welding Elbows.

Both types of elbows have all other advantages that result from the unique Midwest manufacturing process: final working of metal in compression (which means exceptional dimensional accuracy and uniformity), stress relieving, exact included angle, true circular cross-section and uniform wall thickness. For all the facts about Midwest Welding Fittings, ask for Bulletin WF-41.



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By taking advantage of Oakite Wartime Service, you can add extra manpower to your production and maintenance staffs, AT NO EXTRA COST! Whatever your production degreasing or maintenance cleaning problem, put it up to the trained, competent men comprising our Nation-Wide Service Staff. Feel free to benefit from their

"know-how" in helping other plants like yours. Here is your opportunity to get practical assistance, without charge, in speeding up production and increasing maintenance efficiency. An Oakite Technical Service Representative is located nearby. Write today to have him call!

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THE PIONEER RUBBER CO.
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MADE WITH DU PONT NE OPRENE

PURCHASING STEEL

(Continued from page 290)

periment in the customer's plant.

Obviously, the Jominy test as ordinarily run indicates the hardenability of the steel only in the "as quenched" condition. Most alloy steel is used after having been quenched and drawn and we have, therefore, devised a means for interpreting the Jominy test for steel which has been quenched and then drawn at 1000° F., 1100° F. and 1200° F.

The method of doing this is to harden the Jominy sample in the normal fashion, using four samples and reporting the results on one sample. Then draw the other three samples at 1000° F., 1100° F., and 1200° F., respectively. After the samples have been drawn, the Rockwell hardnesses are then taken and from these the physical properties are developed.

On the back of each chart the detailed method of determining physical properties from the Jominy curves is described. It is believed that this information will be interesting and helpful to all those who are interested in heat treating steel because it represents a new and very practical method of determining just what can be expected from any steel which is to be heat treated.

TRUMPETS AND TRAPS

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(Continued from page 111)

selves are nothing; but that their bosses, elevated by skullduggery and chicanery, are the only fountains of wisdom whom it is their duty to obey and not ask any fool questions about it. We think that sort of thing is a menace to what we consider civilized society, and we ain't going to have it, so there!

But what have we been doing all this time except encouraging our own government to do exactly the thing we are scrapping to scrap? We are acquiescent victims of the directive disease. We take orders. Mostly we don't like 'em, but we take 'em.

Neither national leaders, nor band leaders, can play every instrument in the band. If the band leader is so busy tapping his traps that he can't finger his trumpet, how, prithee, is the trumpet to be tooted?

New Rules for the P. A.

We; in this state of affairs, have (Continued on page 294)

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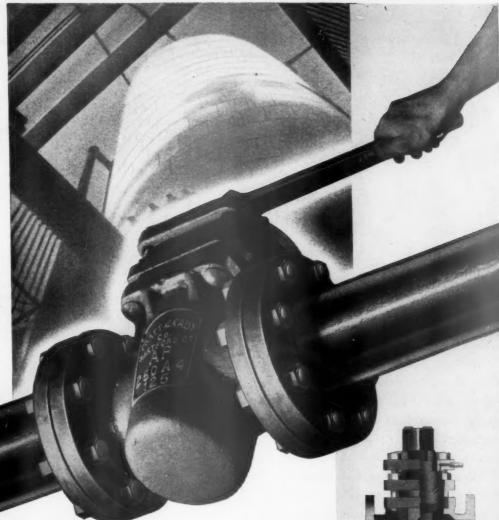
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READING-PRATT & CADY ASBESTOS-PACKED COCK



Sy to operate this cock ... it never sticks

The plug of this READING-PRATT & CADY double gland Asbestos-Packed Cock turns, even when used infrequently, with a fraction of the effort required to operate a ground cock. Yet it holds a constant, tight seal.

This is accomplished by the **U**-grooves of Asbestos which, in addition to providing this *tight* seal, minimize friction and provide a cushion to absorb expansion differential between plug and body.

Use it in lines that carry solids in suspension; for viscous fluids, oils, acids and alkalis. Paper mills, steel mills, packing houses, oil refineries, soap, dye-stuffs and by-products plants use it in many of their process lines—wherever globe, angle or gate valves fail or ground cocks prove unsatisfactory.

In addition to the iron illustrated above, designed for manufacture in bronze, cast steel, Ni-Resist cast iron and copper-free Ni-Resist cast iron.



Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland



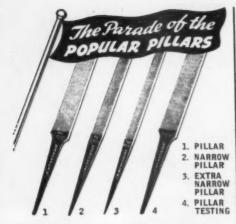
cock showing the location of the U-groove. Cock in main illustra-

tion has double gland feature. Top gland holds plug at pre-set pressure and the second gland independently compresses the



A DIVISION OF AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

No



Of all the many different shapes of Swiss-Pattern files (there are more than 40 in the "American Swiss" line) the Pillar files are perhaps the most widely used.

To be sure of getting best results from the Pillar files you buy, insist on "American Swiss". These precision tools are made of the finest file steel (not tool steel) . . . uniformly hardened by special heat treatment. Their teeth are clean, sharp and accurately cut, and they have more filing surface than ordinary files. Users report that these precision tools, like other "American Swiss" Swiss-Pattern Files, save upwards of 30% of filing costs because they file faster and last longer.

So be sure to insist on "American Swiss" when you buy Pillar or other Swiss-Pattern files... obtainable from our Distributor... there's one near you.

> Buy from Our Distributor SEND FOR CATALOG

AMERICAN SWISS FILE & TOOL CO.
ELIZABETH NEW JERSEY



TRUMPETS AND TRAPS

(Continued from page 292)

a lot of things to think about. Purchasing Agents are becoming the greatest consumers of hair restoratives. Instead of considering the supplying of their plants with materials on the good old basis of the needs of the business, they must try to supply them in accordance with what they may be able to decode from the legalistic phraseology of government directives, put together, it would seem, for the most part by individuals who conceal certain mystical meanings behind barrages of whereases, prefixed by a threat to put you in jail if you don't look out. When I get through reading some of these wordy mazes, my mental state is like that induced by a night of hilarious hooch-hunting up and down Broadway. Oh, the cold, gray dawn of the morning after!

But I can conceive of a regular boss, under these conditions, saying to his Purchasing Agent: "Jim, this is a damned mess, but we've got to keep the wheels turning. I don't know what you're going to do, and I don't want to know. Get the goods we need. Get 'em your own way, but get 'em. If you're arrested, I'll bail you out. If you go to court, I'll defend you. If somebody shoots you, I'll see you're taken care of. If you croak, I'll pension your family. Don't worry me about your damned purchasing department; get the goods. Now get the hell out and don't bother me.'

The Fifth Freedom

What one radio commentator has named as the Fifth Freedom, that of individual enterprise, is worth all the rest of the so-called Atlantic Charter. Given that, everything worth while follows. Some mavericks will jump the herd and get into trouble; some people will abuse freedom; some well-meaning big feet will trample incautious corns. But this thing of waiting for a government order before you can plant your big feet on either corns or solid ground, will keep you in the air most of the time. When the tumult and the shooting die, and when we have licked the totalitarian daylights out of the Amalekites and the lebusites and the Hittites, we've got to turn to and lick the everlasting daylights out of ourselves. We are in the clutch of very bad habits; and they won't help us any when we have to face cleaning up a monumental mess of surplus man-power

(Continued on page 296)



War Plane Specifications Require Torquing

Modern manufacturing methods call for controlled "settings" of vital nuts, screws, bolts, hydraulic fittings — of almost all threaded parts. Leading American aircraft and engine builders almost universally use the permanently accurate STURTEVANT TORQUE WRENCHES for innumerable applications ranging from building

precision instruments to testing frictional drag in controls and motors. 50 models, capacities ranging from 0 to 5 inch pounds on up to 7200 inch pounds.



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Every room in DEWITT OPERATED HOTELS is comfort-planned

In Cleveland
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HERE'S HOW TO GET NEW STEELS FAST!

When a sudden change in design requires new steels, of which you have none on hand —you can still "change over" months sooner by filling in from warehouse stocks.

Frasse stocks, for example, are now fairly well rounded—and are immediately available to carry production loads until mill shipment is made. Emergency quantities of cold finished bars, tubing, stainless steels, alloy and aircraft steels and tubing can be shipped while your mill order is still awaiting scheduling.

On "tap", too, are Frasse technicians to help you get maximum benefit from Frasse stocks — experienced counsel in substituting, switching and scheduling. Frasse steels and technical men have "stopgapped" scores of changeovers until mill shipments could roll. Call on them. Peter A. Frasse and Co., Inc., Grand St. at Sixth Ave., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100-Park 5541) • 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • Jersey City, Hartford, Rochester, Syracuse.



Mechanical and Aircraft STEELS

SEAMLESS MECHANICAL AND AIRCRAFT TUBING · COLD FINISHED BARS · ALLOY STEELS · AIRCRAFT STEELS STAINLESS STEELS AND TUBING · DRILL ROD · COLD ROLLED STRIP AND SHEETS · WELDED STEEL TUBING



TRUMPETS AND TRAPS

(Continued from page 294)

and surplus merchandise, after we have got rid of the surplus mis-direction that will leave us wearing scars for years. We have proceeded as if our resources in every kind of thing were inexhaustible; and our trucks are running on their rims already. We throw out handsome remarks about feeding and supplying the world, but where are we going to get the goods and who's going to be credit man?

And are we going to donate all these benefits, or do we expect to get paid for them? We expected that once, but we never could find a collector to clean up the accounts. And these magnolius mountains of stuff we are going to sell the world; did anyone ever hint to you that maybe there are still a few countries who are not fighting and who will have some salesmen on the road?

All this, before we really have started to lick anybody.

The Purchasing Agent has just one feeding responsibility, after feeding the faces of himself and family. That is, to feed the factory he works for. When he has done that effectively without more than the usual flarebacks due in hectic times, he can qualify as a Skookum Purchasing Agent. And he can't do that unless his boss gives him a master's ticket for unlimited tonnage and any ocean.

Any boss worth working for would a damned sight rather have his Purchasing Agent get into trouble once in a while, from sheer aggressiveness and initiative and cussedness, than to have him spend his days sitting on his tail waiting for directives from Washington or the private office, or anywhere else.

And when a Purchasing Agent draws a boss like that we're apt to see a pretty darned good purchasing department.

MOTOR WANTED

One 750 to 1000 KW synchronous motor, 3 phase, 60 cycle, 2300 volts, 240 R.P.M.

THE SHARTLE BROTHERS MACHINE
COMPANY
Middletown, Ohio

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Backed by 74 Years of Service

... Whether it be to fill normal Industrial and Construction needs, or the special requirements of Industrial Mobilization the only lasting basis for the popularity of any

REVERSIBLE RATCHET WRENCH

is the quality and quantity of the work it is capable of doing.

We are merely reasserting what hundreds of users know when we say

LOWELL REVERSIBLE RATCHET WRENCHES

are unequalled for quality and service.

WE STAND ON THAT RECORD
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LOWELL WRENCH CO.

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"THE OLD RELIABLE"



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You can't have spring quality and service without it!

PROPER BALANCE, timing and coordination between skilled employees, modern equipment and methods, and rigid production control are responsible for Accurate quality and service—to give you the springs and wireforms you want ... when you want them.

From the specification stage through the precision manufacturing operations and the steps of testing and inspection, the Accurate organization works in smooth, production-building balance.

ACCURATE SPRING MFG. CO.

3825 W. LAKE ST. * CHICAGO 24, ILL.

SPRINGS * WIRE FORMS * STAMPINGS

Accurate engineers, too, are specially trained to work hand-in-hand with your own engineers to produce the precise springs or wireforms for the job, thus eliminating waste motion, saving time, trouble and headaches.

We know you will like the friendly cooperation and product quality which you will find at Accurate. When you have spring and wireform problems, bring them to us.



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Complete Data For All Plant Buyers

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Streamlined to SAVE YOUR TIME

Here is a straight-to-the-source-of-supply industrial buying guide that requires NO HUNTING for complete factual information on all plant products and supplies for production and maintenance requirements. PLANT-PRODUCTION DIRECTORY reflects the preferences and opinions of engineers and production, operating and purchasing executives because it is easier and less confusing to use. There are no duplicate listings and no useless classifications in PLANT-PRODUCTION DIRECTORY.

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A Part is never made right unless it is salisfactory to our customers.



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Hand Tools - Special Tools - Forgings

The FAIRMOUNT

TOOL & FORGING CO.

* * 10611 QUINCY AVE. CLEVELAND, OHIO

REVISE SMALL ORDER PROCEDURE

Definition of "Small Order" Modified

A REVISION of CMP Regulation No. 1, revising the small order procedure; making provision for tentative acceptance of authorized controlled material orders; modifying rules relating to time for delivery of authorized controlled material orders and making by the War Production Board.

The definition of "a small order" has been modified to include delivery orders for Class A products placed with manufacturers where the amount of any controlled material required to fill the order does not exceed 3 tons of carbon steel (including wrought iron), 1200 pounds of alloy steel, or 300 pounds of copper and copper base alloys or 500 pounds of aluminum per quarter,

Only prime consumers who have received authorized production schedules from a Claimant Agency or the War Production Board, or secondary consumers who have received authorized production schedules from prime consumers or from other secondary consumers may use the small order procedure to obtain Class A products needed as production materials. The amendment points out that in some cases Claimant Agencies may be permitted to use the small order procedure.

In placing small orders, persons do not have to make allotments—and, therefore, do not have to show any allotment number or quarterly designation on their orders. They merely endorse their orders with the symbol SO, the preference rating assigned to their production schedules, and the certification set forth in CMP Regulation 7 or CMP Regulation 3. They do not have to account for controlled materials purchased to fill such orders and do not need to make any deduction from their own allotment accounts, since they are not required to make an allotment. Persons filing applications for allotments need not make adjustments for controlled materials required to make Class A products which they buy under the small order procedure.

Small Order Limits

In using the small order procedure, a purchaser of Class A products may not order from all his suppliers more of the same Class A product for delivery during any calendar quarter than can be made from the quantities of controlled materials which define the small order limits. Purchasers may place small orders for delivery in any one calendar quarter for any number of different Class 9 products provided the amounts of controlled materials involved are within the defined limits.

In cases where the manufacturer has used the small order procedure, believing his total requirements for the product he is ordering during the quarter will be within the small order limits, and later discovers that due to unforeseeable circumstances his total requirements for the product during the quarter will not be within the small order limits, he may still use the procedure, but must charge the allotment account with the total quantity of controlled materials needed to fill all small orders for the product to be delivered to him during the quarter. If, in such a case, the manufacturer does not have enough controlled materials in his allotment account to cover all of his small orders for the product, he must not use the small order procedure to buy an additional quantity, but may apply for an additional allotment to make up the difference.

Manufacturers of Class A products who receive small orders may obtain controlled materials to fill them by endorsing their purchase orders with (1) the allot-

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ment symbol, SO, and (2) the usual certification. Such an order is an authorized controlled material order. No quarterly designation or preference ratings need be shown on such orders. They must show the date or month when the delivery of controlled materials is needed, either for the production of the product ordered under the SO procedure or to replace controlled materials in inventory which have been used for such purpose.

Controlled Materials from Inventory

Manufacturers using controlled materials from inventory to fill small orders may place authorized controlled material orders endorsed with the symbol SO, calling for delivery of controlled materials after the small orders were delivered to the customer. They may use the SO symbol and extend their customers' ratings to get Class A products needed to fill small orders. Small orders for controlled materials may be combined, even though the total amount of controlled materials to be ordered for the production of Class A products is greater than the amount specified in the definition of a small order, but when they are so combined, the controlled material supplier should be notified by an endorsement on the purchase order for controlled materials, reading substantially as follows:

"The Class A products covered by this purchase order represent the combined requirements to fill SO orders received by me."

Class B products and other controlled materials required to fill small orders may be ordered for delivery at the time and in the quantities necessary to meet delivery dates specified on the small orders subject to the

(Continued on page 302)





The use of adjustable blades, instead of fixed radius bits on the Clark Adjustable Counterbore and Spot Facer make it possible to cut all fractional diameters from 9/16" to 5½" with only 8 tools. That's slashing inventory! They cut clean and true in one operation. Adjust-

ments are quick, simple. Operator can easily rapidly resharpen Blades by hand-that's performance! Pilots from 3/16" to 2½" in 16ths. Available individually or in complete sets.



Make accurate, smooth holes in flat or curved metal, plastics, wood, transite. 7 sizes clean cut ½8" to 5", up to 1" thick. No reaming or deburring. Fewer operations are required.



2 sizes cut holes or discs 2½" to 10", up to 1" thick. Pitched blades cut true, relieve chatter. Other models cut gaskets, rings, discs from live rubber, packing and problem materials.

Mechanic's MODEL A and Heavy Duty Shop MODEL B for accuracy, uniformity in grinding National 60° and Acme 29° tool bits. SPECIAL MODEL C for grinding Clark Hole Cutter Blades.

SEE YOUR JOBBER - WRITE FOR BULLETIN P-11



In Canada: DOMINION BEARINGS, LTD., Toronto, Montreal, Winnipeg Export: THE AMERICAN STEEL EXPORT COMPANY, INC., New York, Los Angeles



ALL SET FOR THE WET



WET CAN'T GET THROUGH!

Frog Brand Oiled Work Clothing is famous for the defense it sets up against The Wet, whether in the outdoors or in industry. That's because Sawyer pioneered in oiled clothing, has years of experience in turning out practical, comfortable garments that really give protection. Of course

right now many dealers stocks are low, for the biggest part of Sawyer's Frog Brand production is going to the War Effort, ... but it still pays to look for the Frog Brand label when you want the best in oiled work clothing.

THE
H. M. SAWYER &
SON COMPANY
East Cambridge, Mass.





FROG BRAND OILED WORK CLOTHING

(Continued from page 301) inventory limitations set forth in P. R. No. 1.

Manufacturers of Class A products must keep records showing the amount of controlled materials ordered by use of the SO symbol, and production records must be accurate enough to show that the quantities of Class A products produced to fill small orders are reasonably related to the amount of controlled materials bought by the use of the SO symbol.

On the other hand, manufacturers of Class A products do not have to furnish their customers with bills of materials, applications for allotments, or equivalent information as to the amount of controlled materials needed to fill any particular small order.

The amendment deletes the provision in CMP Regulation 1 requiring that where a Claimant Agency authorizes a production schedule permitting production of Class A products in different quantities from the quantities called for in the related contract between the Claimant Agency and the prime consumer, the lesser of the two quantities shall govern. As a result of eliminating this provision the authorized production sched-

Prior to the Amendment of October 4, 1943, a controlled materials producer was prohibited from filling an order if, after accepting it for delivery in a given month, it developed that he could not make delivery either in that month or the following month. In such a case the producer was required to report the facts to his Controlled Materials Divisions and could only fill the order if directed to do so by the War Production Board. Direction 16 relating to steel, and Direction 23 relating to aluminum, were issued to vary this rule. By the amendment, this prohibition is deleted so that after having once accepted an order for delivery in a particular month the controlled materials producer is required to fill it ahead of orders accepted for later delivery even though, due to unforeseen contingencies, the producer cannot make delivery in the month originally promised. It is contemplated that Direction 16 will be revoked. Direction 23 will, however, be continued as is indicated in the amendment.

The amendment also specifies that when a producer finds he is going to be unable to deliver an authorized controlled material order on the established delivery date, he must promptly advise his customer of the approximate date when delivery can be scheduled, and keep his customer advised of any changes in that date.

If a controlled material producer is unable to accept an authorized controlled material order because of the scheduling provisions of CMP Regulation No. 1, but has open capacity available in either of the two months following the month in which delivery is requested, he must accept and schedule the order for delivery as early as possible and must promptly notify his customer that the order has been accepted, subject to confirmation within 7 days, for a specified later delivery date. If the producer does not receive confirmation of the order from his customer within the 7-day period, he must reject the order, but in the meantime, he must reserve his capacity for it. If the new delivery date falls within a later quarter than the one shown on the original authorized controlled material order, the confirmation has no effect unless it is accompanied by the customer's certification that he has an allotment valid for the new quarter, in which case the customer must charge the order against that allotment. Confirmation

and certification may be by letter or telegram.

The interpretations issued under CMP Regulation No. 1 have been changed to reflect the changes in the amendment.

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Famco's exclusive front and side gib plate adjustments compensate for wear, eliminate "shimmy," and assure perfect ram alignment at all times. As in the above operation at the Mall Tool Company, Famco Presses speed production and increase precision. Famco builds

32 stock sizes of bench and floor

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Floor Type No. 15 Arbor Press Foot Press tons pressure; and 10 sizes of Foot Presses, bench and stand mounted types. Write for details.

model Arbor Presses . . . 1/2 to 15

FAMCO MACHINE CO. 1313 18th St., Racine, Wis.

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MIS MAN KNOWS WHAT HE WANTS

The engineers who plan and design a huge petroleum refinery, synthetic rubber plant or other industrial enterprise MUST specify the BEST materials. They KNOW that inferior valves and fittings are costly in the long run. With Watson-Stillman products, loss of time and production due to mechanical failures in pipe lines is reduced to a minimum. Take the advice of the man who KNOWS, and BUY only the BEST.

Watson-Stillman fittings are bored from solid drop forgings; threads are accurately cut and aligned for closest tolerances. Uniform wall thickness assures a high factor of safety. W-S valves are cast in the plant's own foundry and machined on special automatic machines. They are made in bronze, and also in special steels to unusual specifications. The Watson-Stillman Co., Roselle, N. J.

Did you ever stop to consider the thousands of Forged Steel Fittings and Valves that go into one of these huge refineries? Watson-Stillman manufacturing facilities are concentrated on these products, thus enabling them to keep abreast of the everincreasing demand. Each W-S product is described fully in a series of Booklets that give factual data in comprehensive form. Send for any that you believe may serve you.



WATSON-STILLMAN

Distributor Products Division

Engineers and Manufacturers of Forged Steel Fittings and Valves, Hydraulic Machinery and Equipment, Hydraulic Presses, Pumps and Jacks.



Lighter Cases carry Heavier Loads when "armored" with STANLEY STEEL STRAPPING

Cutting down package weight and bulk to the minimum necessary to protect contents against damage is wise economy and helps speed up important wartime shipments.

Reinforced with Stanley Steel Strapping, light cases carry more weight safely. Package costs are reduced, and valuable cargo space is saved. Fewer man-hours per unit are required in the shipping room.

Carriers by land, sea, and air approve this practical "armor" against the crushing, bursting, and twisting strains most shipments must meet today. Check up on its advantages for your packaging.

1843 (STANLEY) 1943

STANLEY

STEEL STRAPPING AND CAR BANDING SYSTEMS

WINTER DRIVING HAZARDS

Purchase Orders Reveal Shortage of Anti-Freeze, Chains, Etc.

THE weatherman already has approved the final draft of his timetable for the first blizzard of the winter. To determine how well the commercial vehicle fleets of the nation are prepared to cope with sleet, snow, ice and cold, the National Safety Council's Committee on Winter Driving Hazards, E. L. Ericksen, secretary, has completed a survey of the equipment on hand, equipment ordered and equipment not available to fleet operators.

The survey was conducted among 103 fleets operating in 48 states and the District of Columbia. Their headquarters are in 80 cities and they equip more than 16,580 vehicles with special items of winter equipment.

A summary of reports from these fleet operators indicate that many are going to be short of some items of equipment which are used normally, and this, in turn, means that their drivers are headed for trouble unless they compensate for shortage of equipment by extreme care and caution through the winter months.

Normally the fleets covered by the survey use the following equipment on all or some of the vehicles in their fleets:

	Per Cent of
Equipment	Fleets Using
Windshield wipers	100
Heaters	
Tire chains	
Radiator anti-freeze	
Fans, grill covers or winter fronts	56
Shovel	
Tow rope or chain	
Salt, cinders or sand box	
Other equipment in use by a	ı
small number of fleets: specia	1
tread tires, frost shields, stoves	,
and electric sanders.	

Purchase orders for winter equipment were placed by 86 per cent of these fleets last year and 20 per cent of this group did not receive all equipment ordered. Shortages were reported by fleets with headquarters in 18 cities of 14 states. These shortages included chains, anti-freeze, heaters, defrosters, fans, stoves, grill covers, shovels, frost shields, and ropes.

The most widespread shortages were of tire chains and anti-freeze. Fleets with headquarters in seven cities in six states could not obtain chains and anti-freeze was unavailable to fleets in five cities in five states.

Stock room supplies of winter vehicle equipment were reported adequate for the coming winter by 46 per cent of the fleets, while 42 per cent reported that orders already had been placed. Eighty-one per cent of the latter group have not received all the equipment ordered. Shortages of particular devices were reported from fleets in 16 cities and 12 states. Unavailable items in these cities were: chains, anti-freeze, fans. heaters, defrosters, thermostats, winter fronts, grill covers, and rope. The most predominant shortages still are of chains and anti-freeze with eight cities from seven states reporting chain shortages and nine cities in eight states reporting anti-freeze shortages.

Fleets in 11 cities of eight states reported that particular devices unavailable last winter in their areas are still unavailable. This applied mainly to anti-freeze and chains, the former being short both last winter and now.

Fleet operators also were questioned on the recondi-

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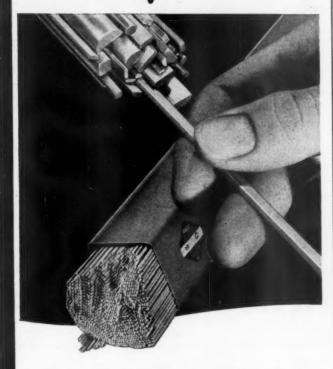
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PAGE for WIRE



With mills practically at capacity producing wire for war and for essential industry, users of wire find that there are many things that they can do to conserve essential materials.

SHAPED WIRE: Use standard shapes. That can be done easily. PAGE has a wide variety, including ovals, hexagon, octagon, square, channel, keystone, flat, half-round, etc.—in diameters to %"—with end section areas to .250 square inch.

WELDING ELECTRODES: Be certain that electrodes are correct in analysis for the job. Lean toward larger sizes for economy. See that no excess metal is deposited in the weld and that your men use electrodes right down to the holder.

GENERAL WIRE: The situation in such products as Spring Wire, Bond Wire, Telephone Wire, etc., is not subject to early improvement. It continues to be important to check waste.

If PAGE experience can help you work out any of these details, we will be glad to cooperate.

PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles, New York, Pittsburgh, San Francisco, Portland

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

Send your Christmas Gifts before...



Because of the limited equipment and the heavy burden placed on all transportation services, the Office of Defense Transportation is urgently requesting you to ship your gifts and packages before December 10th.

Help us keep the vital transportation lines of the nation flowing smoothly over the Christmas period by shipping before Dec. 10th.



NATION-WIDE RAIL-AIR SERVICE



"We just can't get a good black on these parts, Jim"

HEN steel finishing problems arise; when the process that you may be using won't blacken the parts uniformly, don't let your finishing man say, "It can't be done." Let Du-Lite help you.

Many times Du-Lite "know how" has pointed the way, and a manufacturer, stuck with a black oxide finishing problem, has carried on successfully. Special heat treated parts, cyanide hardened, frequently cause trouble. We have helped several manufacturers over this pitfall.

It isn't usually necessary to install new equipment. Our engineers make recommendations after studying your problem and inspecting your equipment. If these Du-Lite recommendations are adopted, we guarantee results.

Du-Lite has never been stumped yet. Time and again we have been able to finish satisfactorily steel parts, when other processes have failed.

DU-LITE CHEMICAL CORP.

(Continued from page 304)

tioning of used special winter equipment. It was found that 79 per cent of them are at present taking steps to put equipment in shape for next winter's use.

Preparing for Winter

Steps being taken include: surveying and inventorying the condition of their winter equipment; overhauling (repair, cleaning and assembly) chains, heaters, heater fans, motors, stoves, fans, winter fronts, windshield wipers, floor mats, grill covers, heater hose, tire chains, tow chains, shovels, and defrosters; draining and straining last winter's radiator anti-freeze liquids for use this coming winter; storing all winter equipment in a clean and orderly manner for easy distribution to vehicles when winter is imminent.

An important step in lengthening the life of equipment is driver instruction in the use and conservation of such equipment. This was done last winter and will be done again this winter by 84 per cent of fleets which

reported.

NEED FOR NON-FERROUS SCRAP

WHILE emphasis in public metal scrap collections is currently focussed on iron and steel through the Victory "Scrap Bank" Drive, the WPB Scrap Processors Branch is working intensively in commercial channels to step up and improve the flow of non-ferrous scrap.

The aim is to induce dealers to gear their trade practices to wartime requirements, and to locate "hidden" supplies in quarters not covered by inventory

reports to the Bureau of Mines.

May Need Public Campaign

The fact that the scrap bank program is concentrated on iron and steel does not mean that a public campaign devoted to non-ferrous metal might not be needed in the near future. The Scrap Processors Branch and the industry divisions are exerting every effort to turn up all possible quantities of copper, brass, bronze, aluminum, and other metals from commercial sources before considering any appeal to the general public.

The scrap dealer inventory situation in copper, brass and bronze contrasts markedly with that in aluminum. In the copper category there is a general tendency among dealers to maintain too heavy inventories, while in the case of aluminum, the situation is just the

opposite.

The Scrap Processors Branch has found many in-(Continued on page 308)

FOR SALE

50,000 NEW 4 PLY PAPER BAGS IN PERFECT CONDITION AT A SUBSTANTIAL SAVING. THESE ARE PLAIN SEWN BAGS WITH 4" VALVES AND CREPE TUCK IN SLEEVES. SIZE 22" X 4" X 43". OUTER PLY 50 LB. KRAFT, 3 INNER PLYS 40 LB. KRAFT.

PITTSBURGH PLATE GLASS CO.

COLUMBIA CHEMICAL DIVISION BARBERTON, OHIO

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Cornerstones of Industry



Our PAX laboratory technicians have developed specialized Skin Cleaners for types of war industry where peculiar dermatoses conditions threatened production. Today, PAX formulas are meeting — and beating — Dermatoses in scores of key war plants.

PAX INDUSTRIAL SAFETY SKIN CLEANSERS

The excellence of PAX Industrial Skin Cleansers is the result of years of well directed effort and a desire to produce the ultimate in a safe, efficient and scientific this cleanser for industry.

produce the ultimate in a area, entorent and scientific skin cleanser for industry.

Schooled in the art of exactness, PAX, with established and maintained high standards, point with pride to a record of leadership and dependability.

We introduced the first modern scientific skin cleanser to industry in 1926. PAX was the first industrial skin cleanser "tough" enough to remove ground-in grease and grime—yet mild and bland enough to completely protect the skin. It is formulated to be used by both men and women plant workers.

both men and women plant workers.

We were the first to use lanolin as a cleansing emollient in a powdered skin cleanser for industrial plant workers.

We developed the vegetable "flat-type" scrubber and we introduced the now famous Safety Trio features (1) pH below 10, (2) No Free Alkali, (3) low buffered alkaline salts.

PAX, thu the ability to centribute new and useful formulas has gained recognition as the leading scientific skin cleansers for industrial workers.

Now, because of Governmental restriction on fats and oil, PAX offers Super-X—a new development—a sudless industrial skin cleanser.





FOR SALE:

OUR MILL can produce two million feet of cold rolled electric welded steel tubing of any size per month, in a range of sizes from 5/8" to 3" O. D., and wall thicknesses from .028 to .083, inclusive. We can produce evaporator tube, certain types of condenser tube, commercial grade aircraft tube, voice tube, incendiary bomb casing tube, and fuse tube. We manufacture square tube, hexagon, rectangular, and many special tubing shapes; including rolled aluminum shapes, angles, tees, etc.

Allegheny Cold Rolled Electric Welded Steel Tubing can be flanged, expanded, cold drawn, fluted, flattened, bent, coiled, upset, beaded, grooved, rolled, spun, threaded, or tapered to meet most every manufacturing demand. We offer same in commercial mill lengths, or cut to each individual buyer's specifications.

If you require tubing for special service, we are fully qualified to make our recommendations to you.

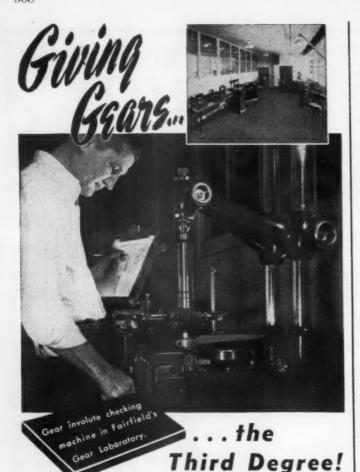
And if you desire to get your steel tubing requirements placed where they will be handled punctually and definitely, on friendly and enjoyable terms, we will be mighty glad to serve you. Be sure to give us your allotment number when replying. We are operating under the C.M.P. Regulations.

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ERE'S where Fairfield gears are checked for accuracy and conformance to specifications. No imperfections escape the equipment nor the engineers in this department. This is just part of the extensive facilities Fairfield maintains to assure customers of getting the finest possible gears to meet the most exacting specifications. Ability to do the job the way it's promised and deliver when it's promised has made Fairfield the choice of many of the nation's leading war production manufacturers.

GEARS MADE TO ORDER

SPIRAL BEVEL . STRAIGHT BEVEL HYPOID • HERRINGBONE **HELICAL** • DIFFERENTIALS SPUR . WORMS AND WORM GEARS



(Continued from page 306)

stances where dealers have been maintaining copper in ventories in excess of the 60-day turnover required by order M-9-b. It has located substantial stocks owned by persons not regularly engaged in buying and selling copper scrap, and by automobile wreckers. The field organization of this branch was responsible for moving during May and June, a total of 3,471,533 pounds of copper, brass and bronze scrap not included in dealers reports to the Bureau of Mines.

The contrasting situation in scrap aluminum is that in the spring dealers overwhelmed secondary smelters with metal due to rumors of a price drop and to optimism occasioned by the fall of Tunisia. The abnormally large shipments to the smelters, combined with their manpower shortage, caused aluminum scrap temporarily to pile up beyond immediate capacity for

Since these developments, aluminum stocks of secondary smelters have gradually decreased and it is expected that in the near future they will be able to absorb scrap at the rate it is produced.

CAST IRON BORINGS

M ILLIONS of pounds of the tiny slivers left after cast iron is drilled or machined are now critically needed for explosives, dyes, and chemicals to aid in preserving rubber.

E. I. du Pont de Nemours & Company declares that each year it requires more than 100,000,000 pounds of these shavings, called chemical borings, for its plants

(Continued on page 310)

BELT LACING and FASTENERS for transmission and conveyor belts



Trade Mark Reg.

STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes, Made in

steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

LEXCO

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-

magnetic and abrasion resisting

alloys.

By using Flexco HD Rip Plates, By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere

FLEXIBLE STEEL LACING CO.

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EL). TAP LIFE INCREASED

PRODUCTION INCREASED 20% SCRAP REDUCED 56%

*

Taps are hard to get ... breakage slows up production . . . improper tapping increases rejects. These are things that you know about . . . and that you, like many others, are telling your tapping operators. But, numerous firms have found that the problem can be efficiently and easily improved. Here's the actual experience of one firm; before installing a Bowser Filtration system, taps had to be discarded after a total of 1800 tappings . . . now they can produce at least 5400 . . . down-time for changing taps has been greatly decreased ... production has been boosted ... scrap drastically reduced . . . and rejection for undersized threads cut 85%. Clean oils produce cleaner work. Write for more details!

S. F. BOWSER & CO., INC.

FILTRATION SYSTEMS FOR

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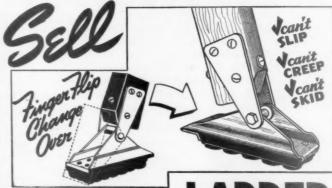
- CUTTING OILS
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- HONING OILS
- GRINDING OILS
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- AND MANY OTHER LIQUIDS



LIQUID CONTROL SPECIALISTS - SINCE 1885
METERING . DISPENSING . STORING . LUBRICATING . FILTERING . DISTILLING







DUO-Safety LADDER SHOES

Save a man's neck—and he's your friend for life!
DUO-Safety SHOES will give him extra protection all
year 'round . . . at small cost!
They fit standard ladder rails—and are safely used on all
type surfaces. Write for bulletin X-10!



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PRODUCTION



STANLEY FLUD-LITE MAGNIFIERS

Increase the Eye-Efficiency of Inspectors, Assemblers, Toolmakers, Machinists, and Others Engaged in Close Work

Eyes that are protected from the strain of close work mean more and better production - an important consideration for war-busy plants.

With Stanley "Flud-Lite" Magnifiers on the job, eye-efficiency is assured by (1) floodlighting the work area with glare-free fluorescent light, and (2) magnifying the work through a high quality, 5" diameter lens.

You can add this tremendous advantage to every worker engaged in close-up work. They can see the tiniest flaws and scratches in machined parts quickly and clearly, detect dimension errors instantly, check reamers, gauges, punches, dies, etc., to perfection.

Save man-hours . . . Speed production . . . Write today for Catalog Sheets. Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut.



No. 701 is the bench type Stanley "Flud-Lite" Magnifier. Equipped with steel base and two friction joint arms which permit adjustment to any desired position. Base is removable to allow permanent attachment to a machine or in any other location.



No. 701H is the portable type Stanley "Flud-Lite" Magnifier. It permits inspection anywhere in the plant, inside machines, and other hard-to-reach places. Fitted with a comfortable grip, hardwood handle, and six feet of approved cable.



1843 (STANLEY) 1943

STANLEY ELECTRIC TOOLS

(Continued from page 308)

and the ordnance works it operates for the government. Borings are used as a so-called reducing agent in making aniline for dyes. Aniline, in turn, enters into the manufacture of dimethylaniline, employed in making tetryl, a booster for high explosives and diphenylamine, a stabilizer for smokeless powder and a required chemi-

cal in preserving natural and synthetic rubber. Soft, oil-free borings, such as result from machining of cast iron piston rings, shock absorber housings, transmission housing, pulley, and textile machinery, are badly needed in carload lots. An average box car

carries 90,000 pounds of borings. Plants machining cast iron are urged to sell their borings, rather than remelting or shipping to blast furnaces. Hard borings are used, too, but the shortage is in the soft, oil-free ones.

1 1 1 WAR'S COPPER DEMANDS

Why We Have Had To Curtail Copper For Domestic Uses

ODERN warfare consumes copper in quantities M ODERN warrare consumes copper and so vast as to be beyond the comprehension of the average individual.

To illustrate the vital role played by the metal, H. W. Clough, vice-president of the Belden Manufacturing Company, chose some data from only one branch of the combat services-the Navy-for the accompanying chart.

An aircraft carrier requires upwards of 2,000,000 pounds of copper; a destroyer needs approximately 380,000 pounds; the small but deadly PT boats in-

(Continued on page 313)



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Immediate shipment without priority.

OVERNIGHT -Badly rutted floor transformed with LEV-L-FLOR into a strong, smooth floor.



LEV-L-FLOR Division (Dept. P-11) **CENTRAL PAINT** & VARNISH WORKS Brooklyn I, New York

DUST-PROOFS DECAY-PROOFS

Write today for

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The A-B-C of **Pipe and Bolt Machines**

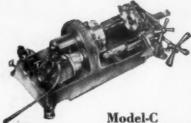


Model-A

A high-speed heavy-duty de-luxe Pipe and Bolt Machine. Range ½ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ½ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Fipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ½ to 2-inch—up to 8-inch with drive shaft and geared tools, Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





A sturdy little Power Unit A sturdy little Power Unit
Converts Hand Pipe Tools
into Power Tools from ½ to
8-inches. Threads 8-inch in
6 minutes. Threads bolts up
to 1½-inch. Equipped with
automatic chuck wrench ejector—a safety feature. Two
men can use it at the same
time without interference.
Easily portable—weighs about
150 lbs. Write for Bulletin-C.

Also a complete line of hand tools.

BEAVER PIPE TOOLS

1143 GROW AVE., WARREN, O.

invitation



Above: "Hallowell" Duration Type Wood Stools installed in a well-known rubber and non-metallic packing plant. This company is using many "Hallowell" stools of this type.

Many other plants and factories are also using "Hallowell" Wood Stools to fill wartime seating

requirements. Of sturdy, selected wood, firmly glued, they are designed to provide maximum comfort and supporthelp workers' efficiency and endurance on long-stretch wartime jobs.

You can get as many "Hallowell" Wood stools as you need without delay. Write for illustrated bulletin #575.

*Wartime products of the makers of famous "Hallowell" Steel Stools.

Fig. 1927 Pat's Pend.



OVER 40 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

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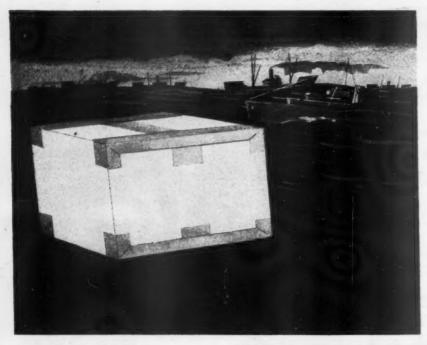
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DELIVERING THE GOODS

Supplies and instruments of war are worthless unless they reach the front. Rugged SAFETEX GUMMED TAPE is doing its part, every hour, to deliver the goods. Sealed with SAFETEX TAPE every carton is bound to get there, securely and undamaged. CENTRAL PAPER CO., MENASHA, WIS.

SAFETEX TAPES ...

Regular SAFETEX kraft paper sealing tape.

Regular SAFETEX tape on waterproof paper backing.

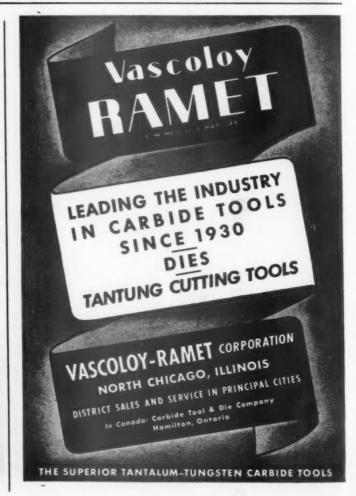
Corded SAFETEX - string reinforced waterproof paper with regular SAFETEX gumming.

SOLSEAL - waterproof paper backing with waterproof gumming.









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(Continued from page 310)

corporate some 12,000 pounds; in one minute of combat 50 fighter planes shoot away 14,000 pounds of the metal; 500 of certain types of anti-aircraft guns discharge 3,000,000 pounds during one hour of operation. Last year approximately 1,800,000,000 pounds of brass (containing approximately 1,200,000,000 pounds of copper) went into cartridge cases alone. This quantity of copper is sufficient for enough household lamp cords to reach to the planet Venus at its minimum distance from the earth approximately 25,000,000 miles!

Virtually every article of war, whether it is for direct combat use or equipment for industries producing for combat, requires copper in some form, Mr. Clough

pointed out.

1 1 1 EXPLOSIVES PRODUCTION CURTAILED

MERICA now is producing so much powder and TNT that explosives production is being trimmed by the government, according to Charles A. Higgins, president of Hercules Powder Company.

'In contrast to ships, planes, and tanks, the production of military explosives since the beginning of the war has always been as much as the Army and Navy could

ship, load, and fire," Higgins said.

In March 1942, less than four months after America entered the war, United States' powder production had already surpassed the peak output of the first World War," he said.

The reduction in explosives output is being applied throughout the chemical industry, both in industryowned plants and in government ordnance works, Mr. Higgins said, although few plants will be completely shut down. Relatively few men and women workers will be laid off, because the chemical business is not a largevolume employer, he added.

STANDARDIZATION PROGRAM FOR GLASS CONTAINERS

WPB Containers Division

W HAT about glass containers? For a better understanding of this situation it is well to examine the background and objectives of War Production Board orders regulating these containers, particularly Orders M-104, 1-103a and L-103b.

Order L-103 is a standardization and simplification order, conceived to attain two objectives: (1) conservation of critical materials and (2) increased produc-

OLS

This order lists the standard containers of simplified designs. The capacities of the bottles and jars listed are those used in the greatest numbers. Naturally, there are not capacities exactly suited to everybody's needs. On the other hand, if we were to attempt to create one standard bottle to fill all needs, the glass industry would lose the benefit of long runs of specially designed bottles for which molds are already in existence. It is the long runs of one design that enables the glass manufacturer to improve his production efficiency. If it had not been handled in this way, the main objective of standardization would have been destroyed.

To date, WPB has not attempted to standardize all containers used. It is expected an amendment to L-103 soon will be issued which will fix new standards and make possible the reuse of a number of glass containers. This action, for instance, will probably include a line of

(Continued on page 315)

POINT

EFFICIENCY THAT RECOMMEND SCHIEREN V BELTS



After years of research, Schieren engineers have produced a leather V Belt that has all the power of flat leather-plus many features of efficiency and economy.

Schieren Leather V Belts have flat leather side walls with a bull-dog grip on the sheaves of the pulleys. They can be run slack and still deliver additional R.P.M .- every minute.

With Schieren Leather V Belts in rolls, you are never out of the exact belt you need. make your belts endless right on the job. You simply saw off the required length and in a jiffy, you have the exact belt you need. You save the hours usually lost in shutdown for replacement.

Schieren Leather V Belts mean a tremendous saving in inventory, too. No need to keep in stock a huge forest of belts of all lengths. No time-wasting search for the missing right size.

At least ten important features of efficiency and economy are compacted in this sensational new V Belt. Write for the complete details.

SCHIEREN LEATHER BELTINGS

Built to deliver ultimate power over a long, industrious life. The service given by Schieren Leather Beltings is worth many times the difference in cost between Schieren quality and ordinary commercial standards. Back of every Schieren product stands 75 years of "know how". And this long experience is always at your service.

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created; whether you require canvas alone, or canvas combined with metal, plastics, wood or leather; whether you need 24 or 24,000, let us show you how an alert, hustling organization can cooperate to meet your requirements intelligently, at low cost, and in a hurry.

WATERHOUSE COMPANY



They bring great cutting power to the job—in the shop or wherever the work may be. They are easy to carry. They need no power source except hand bower and they cut quickly even through ¾ inch annealed bolts. By means of a perfected toggle joint tremendous pressure is delivered to the special steel heat treated cutting edges. They cut rods, bolts, wires, cables and straps. With jaws of special design they squeeze, crimp and perform many other operations.

H. K. PORTER, INC.



Porter tools are sold through leading supply and jobbing houses — subject to the restrictions of war production. Catalog on request—ask for our new maintenance book.



ICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

Prompt delivery of Valley Equipment can be obtained by those authorized to purchase.

Valley Ball-Bearing Motors from ½ h.p. to 75 h.p. . . . Grinders from ¼ h.p. bench type to 5 h.p. pedestal models.



VALLEY ELECTRIC CORP.

4221 Forest Park Blvd.

St. Louis, Missouri

ASING

(Continued from page 313)
18 sizes lightweight Boston Round bottles. The same procedure is being applied to this line of bottles as was followed when the plain round jars were set up as standard containers for food. Although the use of these bottles will not be mandatory at once, it is anticipated that the glass manufacturers will quickly prepare molds for these bottles and WPB urges a shift to them from present containers as rapidly as possible. This will mean better service and it will assist in the overall effort to increase production.

The full effect and benefit of the standardization program will not be felt until the latter part of the year. However, it is anticipated that the glass industry will increase their production this year approximately 20%. With this increase in production, many wonder why it was necessary to issue Order L-103-b restricting the

purchase of various types of glass containers.

There are two reasons: (1) The revision of Orders L-103 and M-104 in April increased the demand for food containers and containers for home canning to take care of the additional food supply developed by the War Food Administration, and (2) the conversion to glass by manufacturers who have had to discontinue containers made of more critical materials.

A survey was made and the demand for glass containers was found to exceed the productive capacity approximately 25%. Consequently, a redistribution plan had to be effected; L-103-b was issued to make available a fair share of glass containers for the packaging of foods and for those who had been deprived of containers made of critical materials.

The peak load for food is during the period from July (Continued on page 317)



1865 South Kilbourn Avenue • Chicago 23, Illinois

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ERRAND OF MIRK

SIGNODE HELPS DELIVERY OF RELIEF SUPPLIES FOR AMERICAN PRISONERS OF WAR . . .

Just as Signode Strapping has helped to deliver the goods on all fronts, it has been entrusted with the life-saving, hope-giving relief supplies for our soldier prisoners of war. Every extra margin of safety is justified to insure against the bitter disappointment of damaged goods from home.

No matter what your product or your shipping problem may be, Signode package and carloading engineers stand qualified to give you practical shipping suggestions for any product or problem.

Remember, a nearby Signode representative is ready to help assure safe delivery of your vital war materials.



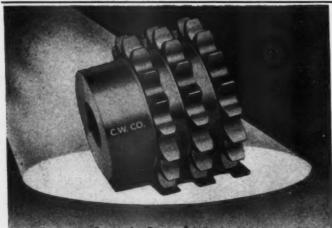
Relief supplies for American prisoners of war aboard the SS. GRIPSHOLM bound for the Far East. Strapping Machine combines the tensioning and sealing operations of the Signode Steel Strapping System into one unit.

STEEL STRAPPING COMPANY

2602 N. Western Ave., Chicago 47, III.

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SIGNODE Signode Steel Strapping Meets All Federal Strapping Specifications



For Fast Delivery ORDER

Cullman Sprockets

Specialized experience and equipment for manufacturing sprockets are your assurance of the quickest possible delivery on sprockets made to your specifications.

In addition there are more than 50,000 Cullman Sprockets in stock ready for immediate shipment. Send for Cullman catalog of essential information to sprocket users.

CULLMAN WHEEL CO.

1352-P ALTGELD ST., CHICAGO 14, ILLINOIS



You'd be sur-prised to know how many war jobs Orange Core Sealing Tape is doing . . . how its superior adhesive strength is helping to protect precious supplies on their long journeys to our fighting fronts. Under the most trying shipping and cli-matic conditions, under the most drastic tests, this speedier, stickier, sturdier tape is delivering the goods—adding to its great and ever-growing reputation as "America's Most Popular Brand."

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1st to the end of October. It was recognized that 103-b would not completely solve the problem. To properly balance the demand with the productive capacity of the glass industry, it would have been necessary to cut some of the products to much lower percentages than those listed in the Order. A further reduction might have crippled certain industries or put them out of business altogether.

The Secondhand Bottle

This Order has brought up the problem of the second-hand bottle. It has been reported that some bottles which normally are sold by a glass manufacturer for \$3.00 per gross, have been sold by used bottle dealers for as much as \$6.00 per gross. Both the buyer and seller, in such instances are in violation of the general maximum price regulation.

Following is a statement from OPA.

"A used bottle dealer may not charge and no person in the course of trade or business may pay prices in excess of the highest price charged during March 1942, by such dealers for sales to the same class of purchaser for such bottles and such containers, whether the bottles and containers are sold separately or together."

What are the factors which will affect the future supply of glass containers? While the glass container industry has been considered by War Manpower Commission as an essential industry, they are by no means free from some of manpower and other problems.

First—Raw Materials. Fortunately, most of the ingredients used to make bottles are in abundance. In this connection, the principal problems are those of manpower and transportation.

The Major Problem

Second—Manpower. The manpower problem presents serious complications. Selective Service is scraping the bottom of the barrel. For the most part the members of the glass industry have done an excellent job with their personnel, working closely with U.S.E.S. and Selective Service. The Containers Division of WPB is also endeavoring to assist them to keep their key men, without whom glass production is bound to suffer. Even now, for example, two tanks are closed down because of lack of manpower in certain sections.

Third—Fuel. Fuel presents a real problem, but one that is not insurmountable. We are working on a program to provide standby facilities and an adequate supply of standby fuel to properly tide the industry

over the critical winter months.

Fourth—Shipping Cartons. When the shortage becomes so acute that it is impossible to obtain cartons for food, it is entirely possible that shipments of glass bottles may be interrupted because of the lack of a shipping container.

Fifth—Closures. The picture is somewhat cloudy concerning the supply of caps. Under Order M-104, no prime steel is available at the present time. Some relief was given in a recent amendment to the Order which permitted closures to be manufactured from black plate waste of various kinds, but this has not proven a satisfactory solution to the problem.

The Glass and Closures Section of War Production Board in cooperation with other Divisions controlling the distribution of the necessary raw materials, is mak-

ing a study of the matter.

Raw materials for all types of caps are critical, and (Continued on page 318)



Because they are rust and corrosion resistant, Harper fastenings withstand severe conditions in the chemical, food, utilities and numerous other industries. In the proper alloys they are non-magnetic, non-sparking, repeatedly removable and have other sterling properties.

4320 STOCK ITEMS

... of bolts, nuts, screws, washers, rivets and accessories in the non-ferrous and stainless alloys.

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EVERLASTING FASTENINGS

BRASS . BRONZE . COPPER EVERDUR . MONEL . STAINLESS



Protect Workers Pouring Metals!

Pulmosan No 40 BABBITTING MASK

The No. 40 Babbitting Mask protects eyes, face and neck of men working with hot babbitt or pouring lead joints on cast-iron; also cinder men around factory cupolas and blast furnaces. Made of sturdy black enamel steel-wire cloth, with adjustable head cap, clear wide-vision glass lenses, full leather apron over chest. Use the No. 40 Mask wherever pro-

tection is required against flying and splashing metals. Write for prices.

Also full line HOODS, MASKS and HELMETS for Dusts, Fumes Acids, Boiler

> Cleaners and Sandblasters Write for details

SAFETY EQUIP. CORP.

176 Johnson St., Brooklyn 1, N. Y.

(Continued from page 317)

it is impossible to state at this time to what extent relief may be obtained. However, the interested sections of War Production Board are working on the problem in an effort to provide some suitable closure.

Sixth—Program of War Food Administration. With conditions as they are in Europe and the Far East, it is anticipated that the War Food Administration will expand its food program. Naturally, this will accelerate the demand for food containers; preliminary estimates of requirements stand at about 45 million gross.

Surmountable Obstacles

These factors are in no sense prophecies of doom. They are all definitely surmountable obstacles. Conditions change from day to day and even though packaging problems may now be covered by such restrictive Orders as L-103-b, the War Production Board must reinterpret the new conditions and re-evaluate some of its Orders, and change them to correspond with the new demands.

Machinery is being set up to evaluate such changes as they occur, and to program the production to solve the problem and still be fair to all. Meanwhile, every one is going to have to do a little horse and buggy driving. For example, there is not sufficient supply of containers for anti-freeze. Instead of usual gallon container, the service man will probably bail it out in bulk this year.

Many packaging programs may now be in an eclipse but industry can help itself and the overall program:

First: By using standard containers. Second: By using larger sizes of bottles. Third: By endeavoring wherever possible to recover shipping containers and reuse them.



There's no doubt about it. American fighters ARE tough! They're full of vigor . . . their determination to win is like iron. But it's the iron in their hands that will help them to stay determined . . . and get the job done quicker! It's our job over here to get weapons and materials to them faster—in quantities that will overwhelm the Axis. Scrap is an important way to help, for reducing scrap helps to increase production . . . saves machines and men, conserves vital materials . . . and tools. Many war plants are doing a better job . . . thanks to Bowser Filtration systems for cutting, grinding, broaching, thread-cutting and other oils . . . for coolants and other liquids. If scrap is a problem with you, call in Bowser. There's no obligation.



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Most instructions to Newton

have read

"REPEAT LAST ORDER"!

Volume in Newton production is due not to chance but to executing a job right in the first place and then matching future orders with the original.

Once started in the use of Newton Screw Machine Products, the average user has only to say "Repeat Last Order" and he can be sure of receiving the initial uniform quality. This Newton policy stood manufacturers in good stead in the past in breaking the depression. It is now helping them to break the Axis!



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If your postwar product needs "Smooth Power"-let's talk about it now. (Priorities needed for current production.)

THE GENERAL INDUSTRIES COMPANY ELYRIA



LEAD AS A LUBRICANT

THE lubrication of the gears of heavy machinery is a difficult problem, especially if the gears operate at a fairly high rate of revolution. Heavy pressures squeeze ordinary grease out from between the teeth and centrifugal force tends to throw it from the rim of the wheel. A lubricant which will remain in place under great loads and adhere to the metal will be far more durable than many of the ordinary saponified hard oils or fibre types of greases now in common use.

Metallic lead has definite lubricating properties. The application of lead as a lubricant to gears of heavily loaded machinery is a relatively new development which is proving of interest to operators of heavy equipment.

The lead is applied in the form of a fine powder mixed into a high viscosity grease which acts as a carrier. In operation the lead powder is forced into any pores or scratches on the surface of the gear teeth and forms a thin uniform film which in combination with the grease provides an exceedingly low friction surface. coating is renewed with each succeeding application thus providing continuous metallic protection as well as lubrication.

The manufacturers of lead-bearing gear grease state that it is extremely tacky and will not throw, that smaller quantities can be used than are necessary with ordinary gear grease and that it will immediately reduce friction and noise on all open gear machines. It is used on hoisting machinery in mines and shipyards, on electric locomotives, on ore roasting machinery and in numerous other exacting applications. It is also being used on hoist ropes under heavy service in severe exposure and is reported to be giving excellent service.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF Purchasing, published monthly at Orange, Conn. for September 1943. State of New York St.

County of New York St.

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Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. M. Morse, Jr., who, having been duly sworn according of eposes and says that he is the Business Manager of this magnetic "Purchasing" and that the following is, to the best of his magnetic "Purchasing" and that the following is, to the best of this magnetic "Purchasing" and that the following is, to the best of his magnetic that the same of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933 embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Harvey Conover, 205 East 42nd Street, New York City; Business Manager, A. M. Morse, Jr., 205 E. 42nd Street, New York City; Business Manager, A. M. Morse, Jr., 205 E. 42nd Street, New York City; Business Manager, A. M. Morse, Jr., 205 E. 42nd Street, New York City. 2. That the owner is: (If owned by a corporation, its name and address of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.

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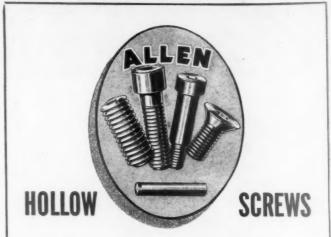
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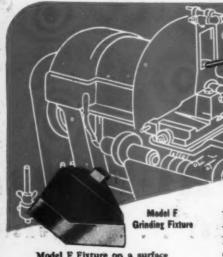
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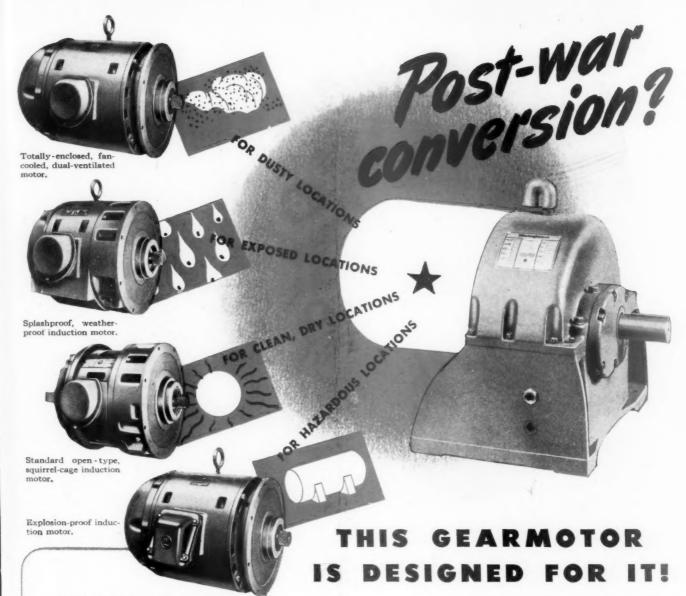
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